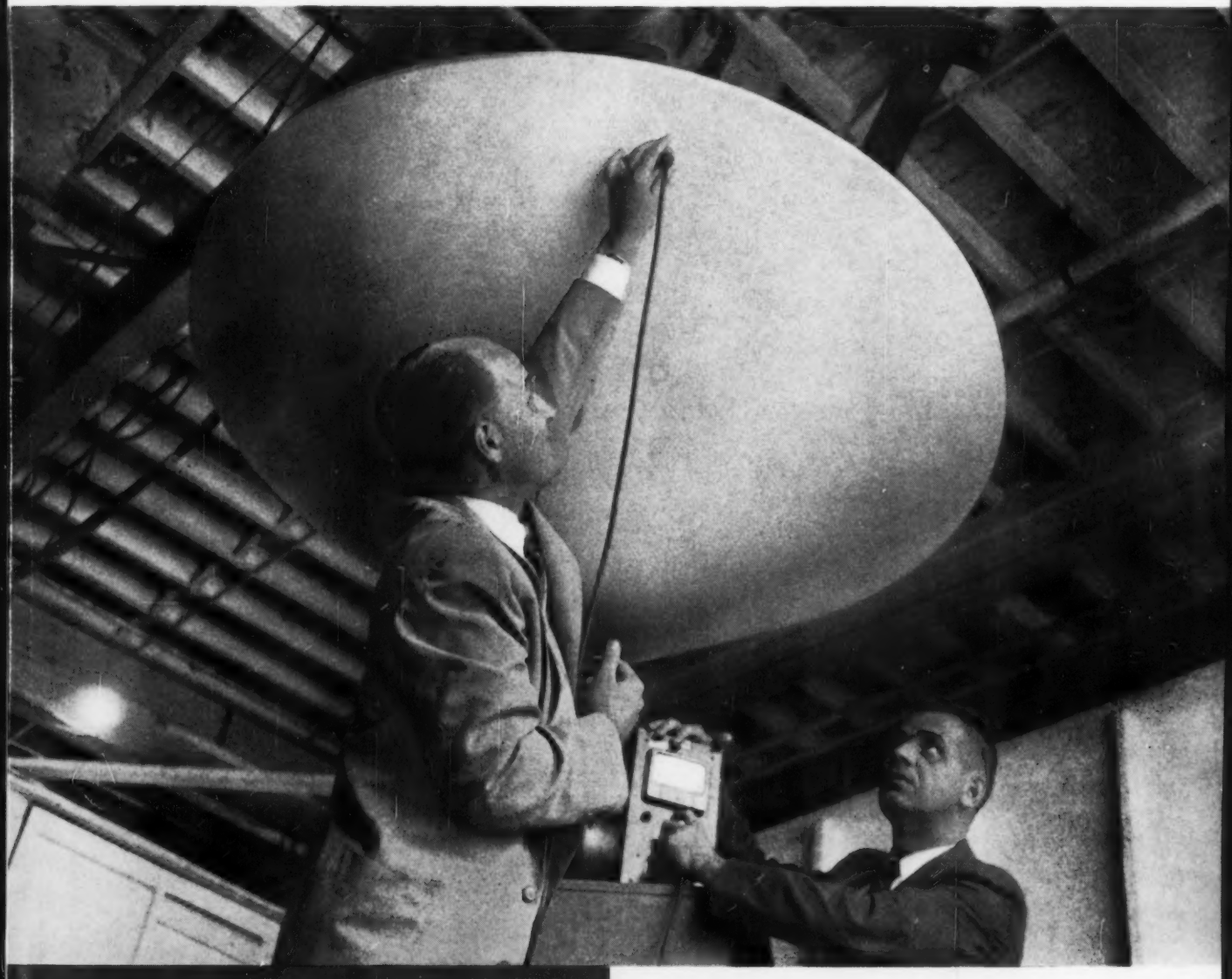
The IRON AGE

August 13, 1959 A Chilton Publication The National Metalworking Weekly



Prototype Line Cuts Nose Cone Plating Costs P. 83

Nuclear Power's Challenge to Metals – P. 45

Handling Problem Employees: Part 2 – P. 57

Digest of the Week – P. 2-3

Photo courtesy of National Screw & Mfg. Co.

COLD HEADING . . . every bolt a check on Aristoloy uniform quality

Bolts by the thousand or by the million . . . profitable cold heading requires steel of uniform structure and chemistry. Steel that can be formed to close, consistent dimensions and better surface finish . . . steel of good hardenability and heat treating characteristics.

Aristoloy electric furnace steels will meet your cold heading stock requirements . . . are ideally suited for most cold headed products.

For complete information about Aristoloy steels, carbon, alloy, stainless or leaded, call the Copperweld representative in your nearest large city . . . or write for NEW PRODUCTS and FACILITIES CATALOG.

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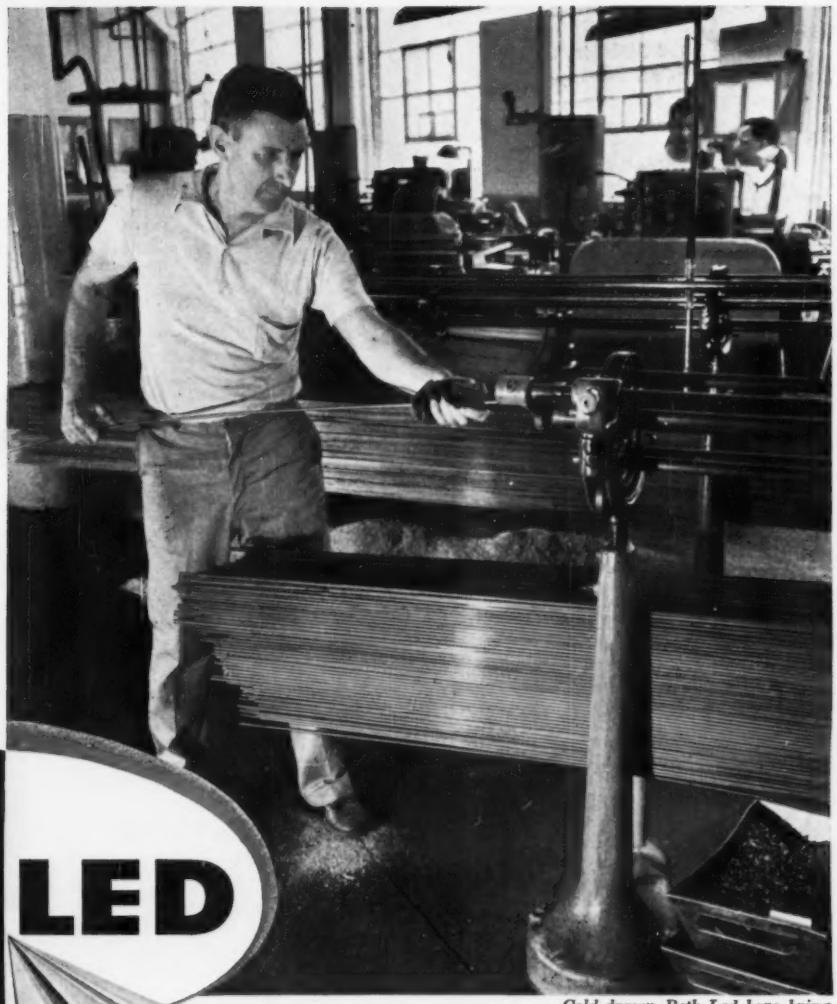

Cold-drawn Beth-Led bars bring greater profits to customers' screw products shops.

BETH LED

for improved machinability

Screw products shops everywhere are turning to Bethlehem leaded screw stock. And here's why:

FASTER METAL REMOVAL Leaded steel permits an increase in optimum cutting speeds from 25 to 40%—sometimes even more.

LONGER TOOL LIFE Leaded steel machines easier in every way; more pieces can be produced per tool regrinding.

SMOOTHER MACHINED FINISHES Leaded steel provides better chip control, takes closer tolerances and more accurate finishes.

Have you tried leaded steel lately?

Beth-Led is Bethlehem's new free-machining, high-sulphur carbon screw stock, the most modern leaded steel on the market. Manufactured under rigid quality controls, Beth-Led opens the way to a top quality prod uct produced at lower cost.

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BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
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Indexed in Applied Science & Technology Index and Engineering Index.

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THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage," Philadelphia.

The IRON AGE

August 13, 1959—Vol. 184, No. 7

Digest of the Week in

★Starred items are digested at right.

EDITORIAL
Khrushchev's Visit: Let's Keep Right Side Up 7

NEWS OF INDUSTRY
★**Special Report:** Atomic Power Lures Industry Into a Closer Look 45
★Will AEC Use Surplus Aluminum? 47
★Steel Stalemate Nears Crisis 48
★Gas Industry Spending Increases 49
★Gas Turbine Drives Furnace Blower 50
The IRON AGE Salutes 52
Men in Metalworking 73

FEATURE ARTICLES
★Plating Team Holds Down Cost In Tooling for Nose Cones 83
Heat Method Aids Hardening 86
★Three-Step System Bonds Fluorocarbons 88
★Can Nickel-Free Stainless Compete At High Temperatures? 90
★X-Ray Signals Thickness Limits 93
★Twist Guides Speed Rod Mill Output 94
Cast Rolls Brave Higher Heats 96

NEWS ANALYSIS
Newsfront 9
Report to Management 55
Automotive 61
Washington 65
★West Coast 67
★Machine Tools 69

MARKETS & PRICES
Market Planning Digest 43
★**The IRON AGE Summary** 125
★Purchasing 126
Index to Prices 129
Iron and Steel Scrap Markets 130
Nonferrous Markets 134
Clearing House 150

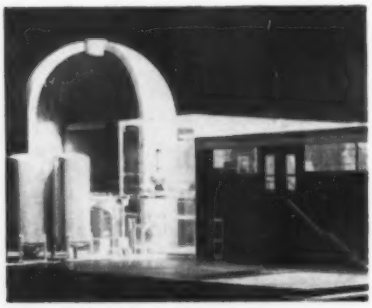
REGULAR DEPARTMENTS
Fatigue Cracks 11
Letters From Readers 13
Coming Exhibits, Meetings 15
You Arbitrate It 100
New Materials, Components 110
New Equipment 116

INDEX TO ADVERTISERS 156

NEWS ARTICLES

NUCLEAR POWER

Steel Studies—It won't pay off in anything but problems for some



years, but steelmakers are still taking a much closer look at the possibilities in nuclear energy. P. 45

SURPLUS ALUMINUM

Will AEC Buy? — House and Senate differ on whether Atomic Energy Commission should use stockpiled aluminum. If it does, an industry row is sure to develop. But OCDM has the final say. P. 47

STEEL STRIKE

Crisis Coming—In spite of "no progress" in negotiations, something will have to give soon. The President is likely to become personally involved. Meanwhile, bitterness increases. P. 48

GAS TURBINE BLOWER

First of Its Kind—U. S. Steel will be the first mill to use a gas turbine to drive a blast furnace

Metalworking

◀ COVER FEATURE

PLATING NOSE CONES: Tooling costs in a missile program must be held to a minimum. G.E. did it with a cooperative nickel plating team. General Electric's G. H. Cook, left, and L. P. Vollmuth of Bart Mfg. Corp., measure the plating thickness. P. 83

blower. The unit, built by Westinghouse, will be installed at U. S. Steel's South Chicago Works. P. 50

AEROSPACE WORK

Tools Needed — Aerospace Industries Assn. has drawn up a list of tools and processes that will be needed to work on materials and to meet the demands of outer space travel. P. 69

FEATURE ARTICLES

VACUUM DEGASSING

Works in Ladle—A new vacuum process produces cleaner, tougher steel for die-blocks and forgings. Key to setup is the degassing of the molten steel in the ladle on regular production basis. Efficient removal of hydrogen gas is the major benefit. P. 86

BONDING FLUOROCARBONS

By Three-Step Method — When used with suitable adhesives, a new process bonds fluorocarbons reliably. First step treats surface with vapor blast and the second combines washing and etching in dip-tank setup. Third step counteracts contaminating. P. 88

NICKEL-FREE STAINLESS

At High Temperatures—Recent tests show that nickel-free stainless can be used at temperatures ranging from 900° to 1350°F in place of several 18-8 type grades now being used. Two of the new alloys, AISI Types 201 and 202, have been accepted as standard steels. P. 90

SIGNAL THICKNESS LIMITS

With X-ray — One warehouse added 30 pct to its production efficiency by installing a non-contact radiation gage to measure custom-slitted coil and sheet. P. 93

HIGH-SPEED TWIST GUIDES

Triple Rod Mill Output—A 23-stand, three-strand unit turns out finished rods for reinforcing and wire rope at a new 10-in. rod mill. Estimates indicate the mill will more than triple output. P. 94

MARKETS & PRICES

GAS CONSTRUCTION

Spending Heads Up—During the period between 1959-62 gas industry construction spending will probably cost $7.9 billion, American Gas Assn. estimates. This will be a 25 pct increase over previous four years. P. 49

REPORT TO MANAGEMENT

Big Fourth—If the steel strike extends longer than six weeks, there will be a big rebounding in the fourth quarter. Gross National Product and Industrial Production records are likely. P. 55

FARWEST STEEL IMPORTS

More Than Double '58 Rate—Since the steel strike began more imports are moving into the West Coast area. But problem is a long-range one because foreign mills easily undersell U. S. mills. P. 67

STRIKE IMPASSE

Ike May Intervene—Steel negotiations have reached such a stage of impasse that it may take Presidential intervention to cause a break. Insiders in the Administration feel it has to be settled before the visit of Premier Khrushchev. P. 125

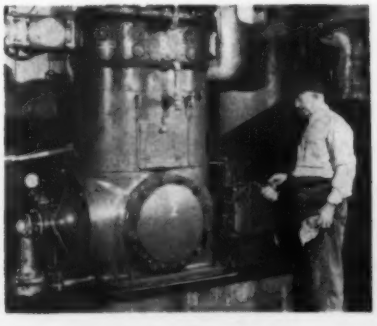
PRESS PRICE INCREASES

A Likely Prospect — Price advances of 5-10 pct for both light and heavy press equipment are expected soon. P. 126

NEXT WEEK

LUBRICATION

In the Long Run—A program of planned lubrication is the answer for any company that hopes to stay in business and show a profit. Next week's technical feature will tell you how to get more for your lubrication dollar.



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"COLD-POINT" DRILLING!

of Super-Hard Metals, Glass or Ceramics with "Buffalo" Hollow Spindle Drill. Speeds to 10,000 RPM!

Now you can buy a production drilling machine especially designed to deliver the high speeds and forced coolant flow necessary with the new hollow core cold-point drill, and diamond impregnated bits.

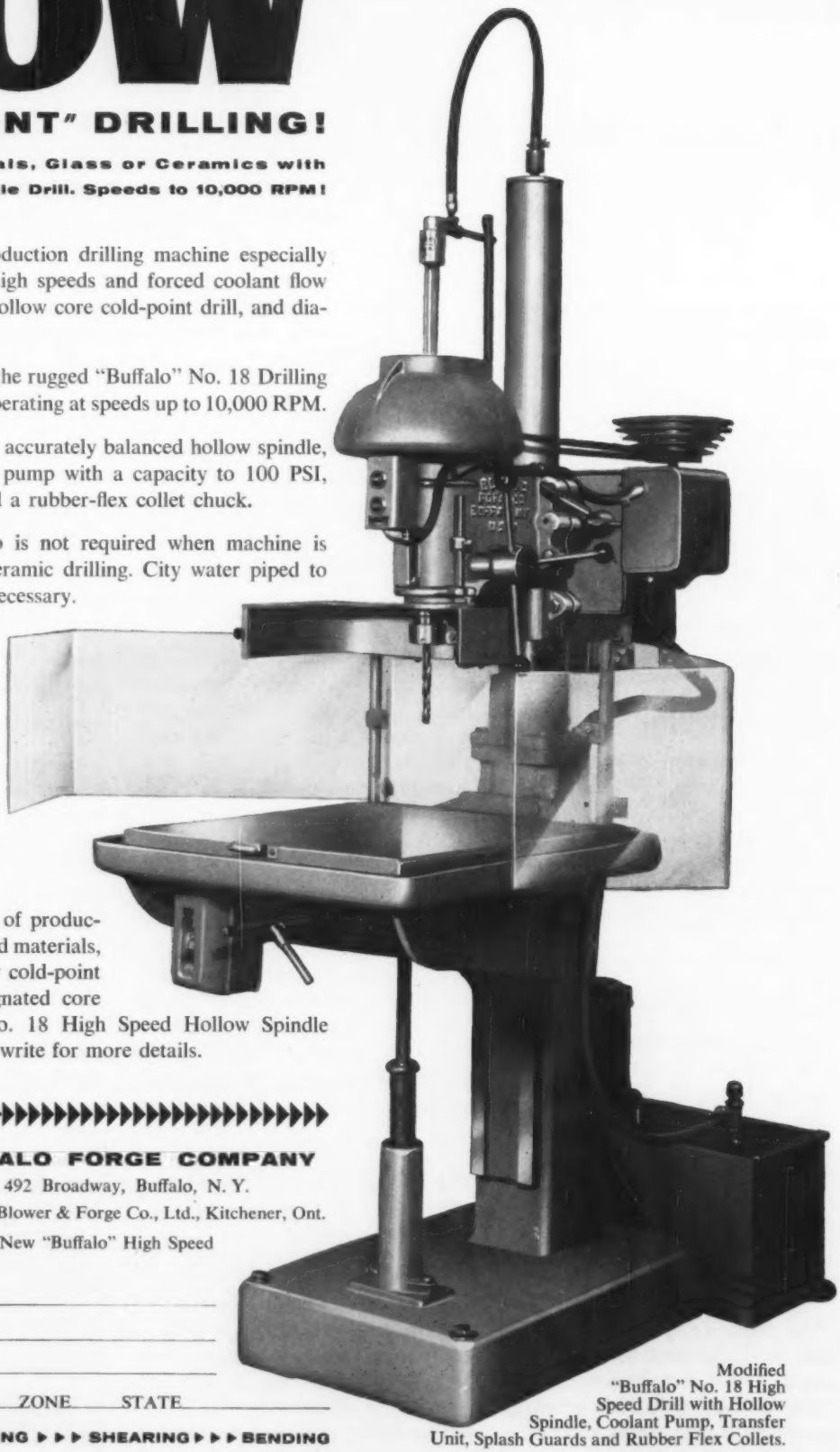
This modified version of the rugged "Buffalo" No. 18 Drilling Machine is successfully operating at speeds up to 10,000 RPM.

Modifications include: an accurately balanced hollow spindle, coolant system having a pump with a capacity to 100 PSI, special splash guards and a rubber-flex collet chuck.

The high pressure pump is not required when machine is used only for glass or ceramic drilling. City water piped to the spindle is all that is necessary.

It is possible to handle heretofore impossible drilling jobs at production speeds and regular drilling can be done much faster. In many cases reaming or finishing can be eliminated because of the fine quality of the drilled hole.

If you have the problem of producing holes in extremely hard materials, you need the new hollow cold-point drill or diamond impregnated core bits and a "Buffalo" No. 18 High Speed Hollow Spindle Drill. Use the coupon or write for more details.



Modified "Buffalo" No. 18 High Speed Drill with Hollow Spindle, Coolant Pump, Transfer Unit, Splash Guards and Rubber Flex Collets.

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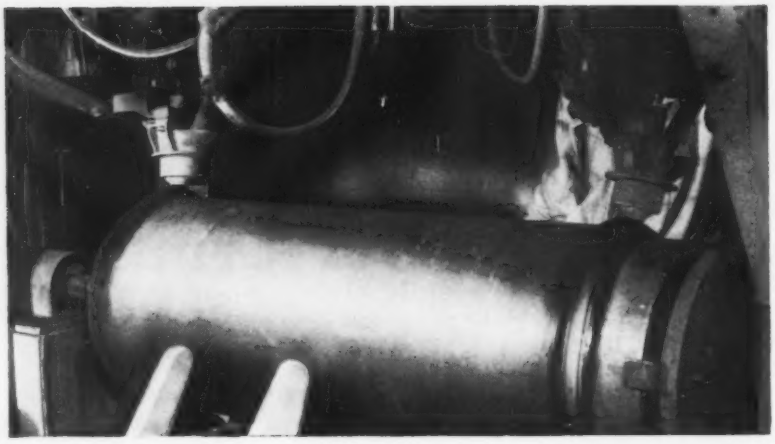

New steels are born at Armco

Armco High Strength No. 4 meets ICC requirements for this 100-pound capacity LP Gas cylinder. It's easily brazed and welded, too.

Because long service life is so vital in railway cars, Armco High Strength Steels No. 1 and No. 2 are specified for many key parts.

Choose from 4 economical grades of Armco High Strength Steel

All four low-cost grades of Armco High Strength, Low-Alloy Steel offer strength with light weight in fabricated parts. Each grade supplies a specific combination of mechanical properties, corrosion resistance, and workability to meet individual product needs.

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No. 1	70,000 (minimum)	50,000 (minimum)	4 to 6 times that of mild steel	Holds paint well—Excellent weldability—For applications where fabrication is limited to flanging and light forming.
No. 2	64,000 (typical)	45,000 (typical)	Equivalent to No. 1	Holds paint—welds as well as No. 1, but is more workable.
No. 3	60,000 (typical)	40,000 (typical)	Equivalent to mild steels	Designed for drawing—Surface suitable for plating with proper preparation.
No. 4	70,000 (minimum)	50,000 (minimum)	Equivalent to copper-bearing mild steel	Suitable for limited forming or flanging—Lowest in cost of the four grades.

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Khrushchev's Visit: Let's Keep Right Side Up

We have had plenty of time to digest the fact that Mr. Khrushchev is coming to town. He has tried to get the bid for some time. And you can bet he will make good use of his time while visiting us—for propaganda.

We are an emotional people. We tend to ascribe our own good points to others. One might almost say we are internationally naive. This is as it should be. But it is a danger where the Russian dictator is concerned.

We ought not to assume that Mr. Khrushchev will believe in our American way one iota more when he leaves than he did when he came. Nor should we feel that he "understands" us better and thus will defer to us in the future.

Nor should we build up high hopes that the cold war is over. It would be unfair to Mr. Eisenhower for any of us to assume that both men can "settle" any of the cold war points. They will talk of them but Khrushchev's visit is not a Summit conference.

Mr. Nixon did a top level job of representing Joe Doakes while he was in Russia. His speeches, his reactions, his answers, and his nimbleness were appreciated by all of us. It will be the man-on-the-street (us) who will judge Mr. Khrushchev when he makes his debut here.

Nothing much will be solved because of the Red dictator's trip. But it will be clear that we were leading from strength when Mr. Eisenhower gave the invitation for the trip.

Years ago we were not so strong. And less than a month ago no one had ever told the Russian people over their own radio, television, and through their press what we Americans really thought. Mr. Nixon set the stage for the American people's philosophy in Russia. Now we Americans will watch closely to see just how the canny Russian cock-o'-the-walk will react to what he sees, hears, and learns here.

We don't have to fawn on the Red dictator, but we can be courteous to him. Because he is the head of a nation which rivals ours—and which we must forever reckon with in the years to come—there can't be serious "incidents."

Just so we don't attribute to Mr. Khrushchev the same friendly understanding we have for each other. That he talks, laughs, is good at repartee does not mean a thing. It is what he sees and hears that may make a dent on him that counts.

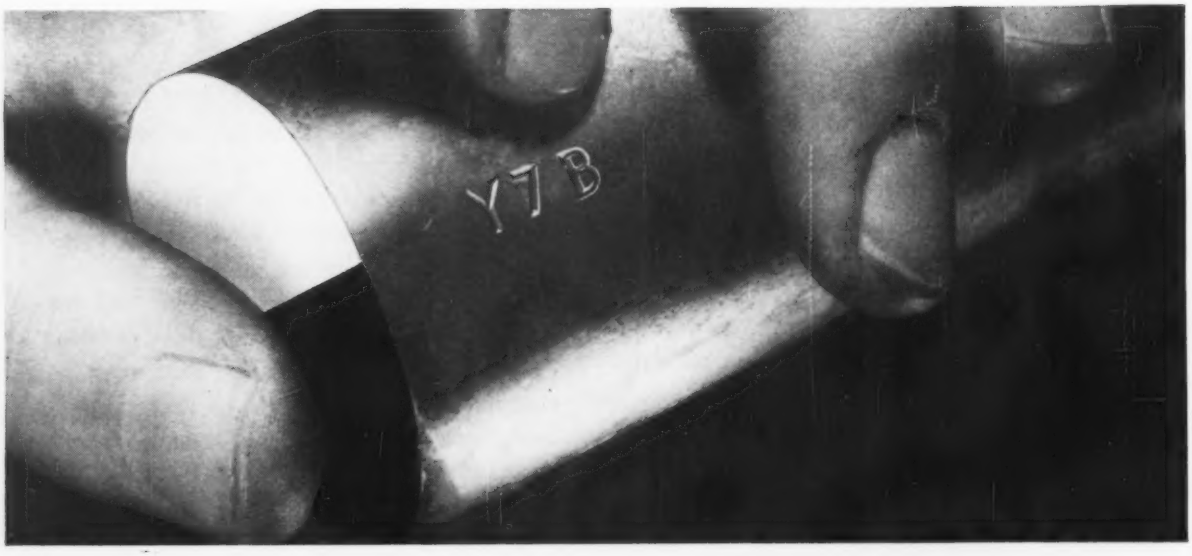
We hope!

Tom Campbell

Editor-in-Chief

As positive as a fingerprint—

certified alloys from Ryerson



Alloys from different furnace heats can vary in hardenability and other working characteristics. But with Ryerson alloys you *know* the differences—before you start production. Ryerson alloys are marked with symbols identifying them with the particular heat from which they were rolled. As a Ryerson *extra* you get a dependable special report showing:

1. **Heat analysis.** Not just the chemical range for the type of alloy, but the specific analysis of the heat from which your steel was rolled.
2. **Tested Hardenability.** Not just the average hardenability for the alloy, but the actual Ryerson-tested hardenability for the particular heat . . . as quenched, and at three draw temperatures.

For more information about Ryerson alloys and the Ryerson Certified Alloy Steel plan, call your nearby Ryerson plant.

Principal products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing, industrial plastics, machinery and tools, etc.

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Jet Air Lift for Iron Ore

Jet cargo planes will prove to be the most efficient way to move iron ore from South America to Great Lakes ports within a few years, a new study for a major steel company finds. This, of course, assumes advanced model planes, but the aircraft company making the study is confident that all theoretical and most practical problems are already at hand.

Soluble Grinding Coolant

Greater economies for grinding operations on carbon and tool steels, for cast iron and titanium, are claimed for a new soluble grinding coolant. The coolant leaves no powdery deposit on critical machine surfaces and acts as an in-process rust inhibitor. Dilution ratios run to as high as 150 to 1.

Precision Press Forging

A new hot-die press forging technique will make it possible to approach the ultimate dimensions of a part more closely. It also reduces the number of die impressions in a sequence. Development of the process required the finding of a new alloy and a new foundry molding technique that employs a moldable graphite mixture by which to cast the unmachinable alloy.

Bargain in Structurals

Fabricated structural steel continues to be one of the biggest bargains in the industrial supply picture. Purchasing agents are reminding management that structural prices are still way down from both last year and 1957. Based on past experience price relief can be expected in the near future with the revival of heavy construction.

Aluminize with Aqueous Flux

A new method of aluminizing steel uses an aqueous flux. After degreasing, air drying and pickling, parts are dipped in the aqueous flux, a saturated potassium fluoride solution with traces of hydrochloric acid at 60°-80°C. On drying, there forms a continuous, protective, oxide-reducing and air-excluding film. Parts are then preheated to 400°C to reduce the time needed to reach temperature of molten aluminum.

Industrial Indexes Hold

So far, the steel strike has not made a dent in indexes of industrial production, nor in gross national product. Washington experts say this could continue until early September. Inventories of almost all industrial products are strong They'll be some serious setbacks, of course, if the strike runs for more than two months.

Hot Metal Affects Plans

The swing to hot metal in steelmaking is causing some mills to review new construction plans. Scrap may become more attractive if hot iron continues to be so plentiful. This would mean a second look at blast furnace expansion.

Breakthrough in Lithium

It's reliably reported that atomic research has scored another advance in metallurgy. Lithium salts, when radiated in a reactor, aggregate to form pure atoms. The metallic form is said to be as pure as ever seen.

Continuous Cast Aluminum

Continuous casting of sheet and strip aluminum is a virtual reality. Three methods are giving good results under different circumstances in pilot plant and running-in operations. At least one of these produces strip up to 100-in. wide. Formal word should come within six months.

Smaller Computer Elements

Electronic computer elements so tiny that more than 310,000 will fit into quart container will result in fast, cheaper and much smaller computer equipment. The new ultra-high-speed units are small rectangular bars of ferrite magnetic material. They are expected to replace expensive semiconductors such as transistors and diodes.

Introducing—

D-500 Fire Hose

—for a surer kind of protection under fire

Here's hose with all the dependable durability a 500-lb. factory test assures-plus lighter-weight construction that makes for easy handling. It's highly flexible and *stays* that way. And it's mildewproof.

Petro-chemical users will cash in on its unsurpassed oil- and chemical-resistance – inside and out. In fact, that's important to any user of the newest fire-fighting chemicals. And D-500 Fire Hose is available with white, black, yellow or red cover for ready visibility as well as for those who require color-coded fire-fighting lines.

What's more D-500 Fire Hose is guaranteed throughout its long life against defects in workmanship and materials. For the full story of this newest advance in fire-fighting equipment, contact the G.T.M. through your Goodyear Distributor—or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

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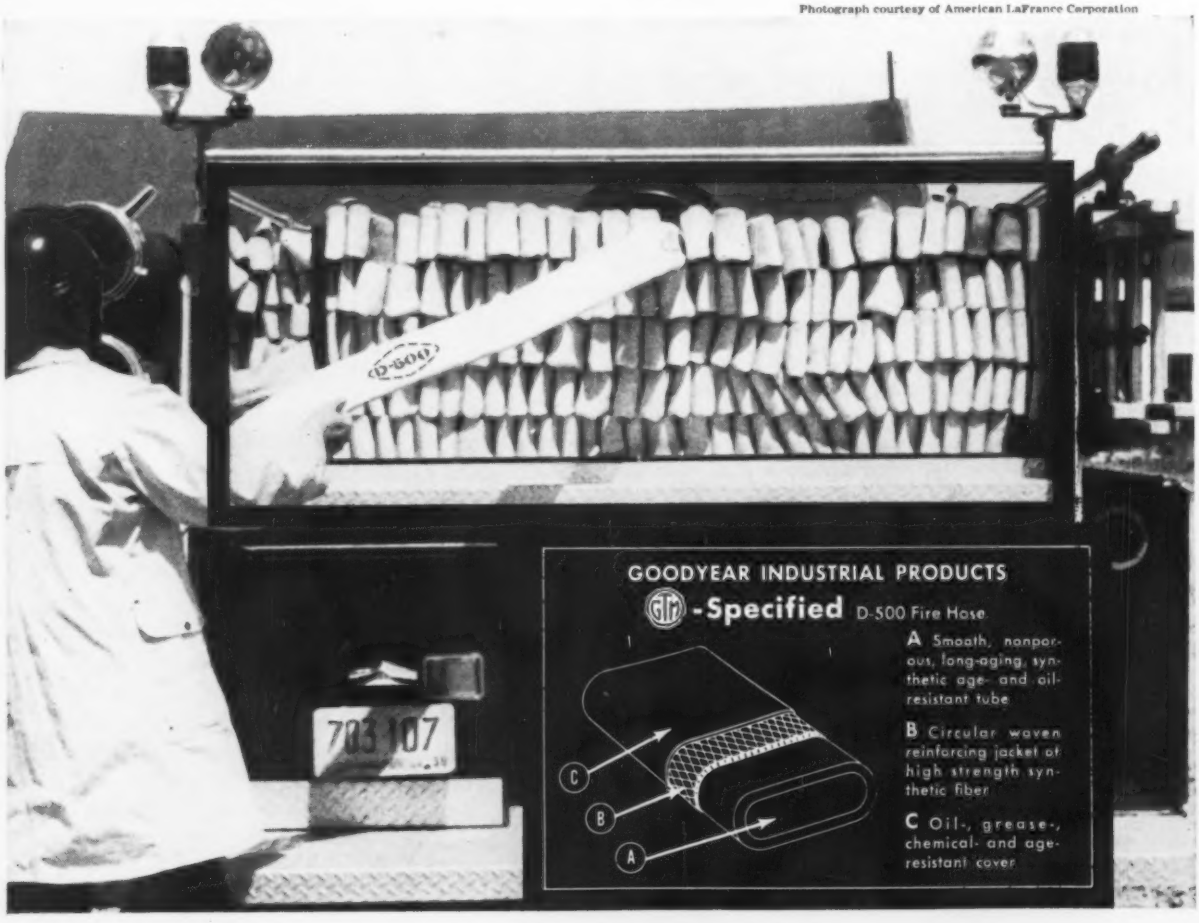


INDUSTRIAL FIRE HOSE BY

GOODYEAR

THE GREATEST NAME IN RUBBER

Coming: Lube Dollar

Does your plant practice the hit-or-miss approach to lubrication? If it does, you know the results are costly — decreased production and safety, increased maintenance and power consumption.

The answer, of course, is a planned lubrication program. In next week's issue you'll find out how to set one up by reading our special 16-page feature—"How to Get More for Your Lubrication Dollar."

You'll find out how to buy fewer, better lubricants, how to handle and store them, and how to apply them properly for the maximum benefit.

For advice on logical lubricating see the August 20 issue.

Larger Than Life

The man with the classy chapeau in the photograph below is the Roman god Mercury. Beside him is internationally known sculptor

Marshall Fredericks, commissioned by the Mercury-Edsel-Lincoln Div. of Ford Motor Co., to render the sculptured head.

While originally intended solely for illustration in Mercury's auto advertising program, the head is considered worthy of exhibition as a work of art. It will be offered to museums and art galleries for display.

Modern Ideas — The Mercury created by Mr. Fredericks is considered more "rugged" than others sculptured in the sixteenth to nineteenth centuries.

In what way? Well, the winged cap has "been elongated and the wings extended to more symmetrical and rhythmical proportions. The head has been designed at a dynamic angle to give the appearance of motion."

Shown here in clay, the finished head will be cast in honed nickel alloy. It will be one-quarter larger than life-size, twenty-four inches high and mounted on black Belgian marble.

Breakthrough

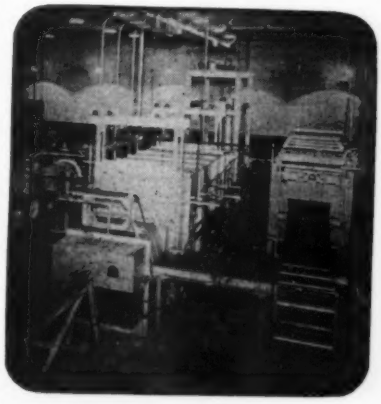
Here's the latest entry under the heading "Why didn't someone think of this sooner."

Steel Horizons News, published by the Allegheny Ludlum Steel Corp. reports on a spill-proof baby training spoon that is supposed to be self-leveling. The secret, says A-L is swivel action. The weight of the food helps.

Pink or Blue?—The business end is Allegheny stainless, the handle—naturally—pink or blue plastic, and the two are brought together by Rhonda B Corp., Detroit.

We haven't actually seen one here at The IRON AGE so we can't really tell. But having tangled with several fairly active kids of our own we feel that trying to make any kid's spoon spill proof is kind of like trying to square the circle. It looks intriguing, but once you try it you find it just can't be done.

LABOR SAVED 50%
PRODUCTION UP 50%



R-S . . .
CONTINUOUS HARDENING, QUENCHING, DEGREASING, DRAWING LINE

It's one operation instead of four to heat treat cylinder liners at Continental Motors with the R-S equipment. Electric heat treating line is one complete unit ...temperature is 1575° F. for hardening, it is oil quenched and the draw furnace operates at 1100° F. The atmosphere is controlled through hardening and quenching operations and capacity is 1,300 gross lbs. per hour.

R-S Heat Treating unit requires only two men instead of four with the conventional type. Production rate is up 50% . . . quality is uniformly high . . . and the unit paid for itself in 22 months.

Why not put these savings into your heat treating? Write today for your copy of the booklet on better heat treating. Ask for R-S 200. No obligation.

R-S FURNACE CO., INC.
North Wales, Pa.

IHEA

Car Hearth Furnaces
Continuous Furnaces
Rotary Type Furnaces

R-S FURNACES

"NORTH CAROLINA had what we wanted... a growing market and the right people"

Fritz Jensen, President, Southern Screw Company

Fritz Jensen picked North Carolina for his operation because the surrounding furniture industry provided a ready made market for metal fasteners. With one associate he trained 14 local people and went into production of wood screws in 1946. Production increased rapidly because trainees were quick to acquire needed skills.

Accessibility extended distribution. North Carolina is within overnight distance of all the great metropolitan centers from Boston south, and west to the Mississippi and Great Lakes. Today seven kinds of fasteners are being made at Southern Screw. An inventory of one and one-half billion fasteners is maintained.

Number of employees has increased in 13 years from 14 to 800— a growth percentage of over 5614%.

Southern Screw Company is in the forefront of North Carolina's metal working industry which ranges from components to complete assembly.
Metal working industry investment for new and expanded plants in North Carolina during the last three years is in excess of $159,000,000.

For prompt and confidential plant location information contact Wm. P. Saunders, Director, Department of Conservation and Development, Raleigh, North Carolina.

Southern SCREW COMPANY

NORTH CAROLINA

More on Stal

(In the July 23 issue Lee Wilson, chairman of the board, Lee Wilson Engineering Co., asked for details about subscribing to Stal, Russia's No. 1 magazine on steelmaking.)

Sir—Lee Wilson and other readers might be interested to learn of an American source for translation of the Russian magazine, Stal, and other journals.

Primary Sources has been selecting articles for English translation from the following four Soviet technical journals: Stal (Steel), Zavodskaya Laboratoriya (Factory Laboratory), Tsvetnye Metally (Non-Ferrous Metals) and Koks i Khimia (Coke and Chemistry).

This compilation appears in our quarterly, Soviet Metal Technology. —H. S. Rabinovich, Primary Sources, New York, N. Y.

Soviet Metal Technology is $60 a year from Primary Sources, 11 Bleecker St., New York 12, N. Y. —Ed.

Ductile Iron

Sir—On page 9 of the July 16 issue there was a short item about ductile iron for engines which was quite interesting to us.

Could you give us more information about this? Was the 60 lb reduction in weight all in the block, or was there weight reduction in the head and piston also? What was the percentage reduction in weight? Whose engine was this and is this lighter weight engine in production?—H. A. Deane, Vice President, Campbell, Wyant, And Cannon Foundry Co., Muskegon, Mich.

▪ Get in touch with Mr. John V. Moran, Jr., Section Head, Special Publications Section, The International Nickel Co., Inc., New York, N. Y.—Ed.

Metallics

Sir—We are interested in the Newsfront item in the July 16 issue describing lead-cemented mixtures. We are particularly interested in the technique used to maintain dispersion in such mixtures as the lead-boron mentioned. — R. M. Shapiro, Senior Engineer, Schlumberger Well Surveying Corp., Houston, Tex.

▪ For further information contact Battelle Memorial Institute, 505 King Ave., Columbus, Ohio. —Ed.

Fastener Dollar

Sir—If available, please mail two copies of your article, "How to Get more for Your Fastener Dollar," which appeared in the July 2 issue.

This is the first comprehensive paper we have seen on this subject. Both our mechanical superintendent and I would like to have copies.—P. E. Jordan, Chemical Engineer, By-Product Department, Wheeling Steel Corp., Follansbee, W. Va.

Copies are on the way.—Ed.

"My foreman is fair and square —his ability is fair and his personality is square."

Herbert W. Westeren, Asst. Director of Hayes Research & Development Group, Reports . . .

PRODUCTION HEAT TREATING BREAKS THE 3000°F. BARRIER

Today's "exotic" refractory metals for nuclear reactors, rocket engines, and electronic components call for heat treating temperatures of 3000°F. plus . . . temperatures heretofore limited to the laboratory.

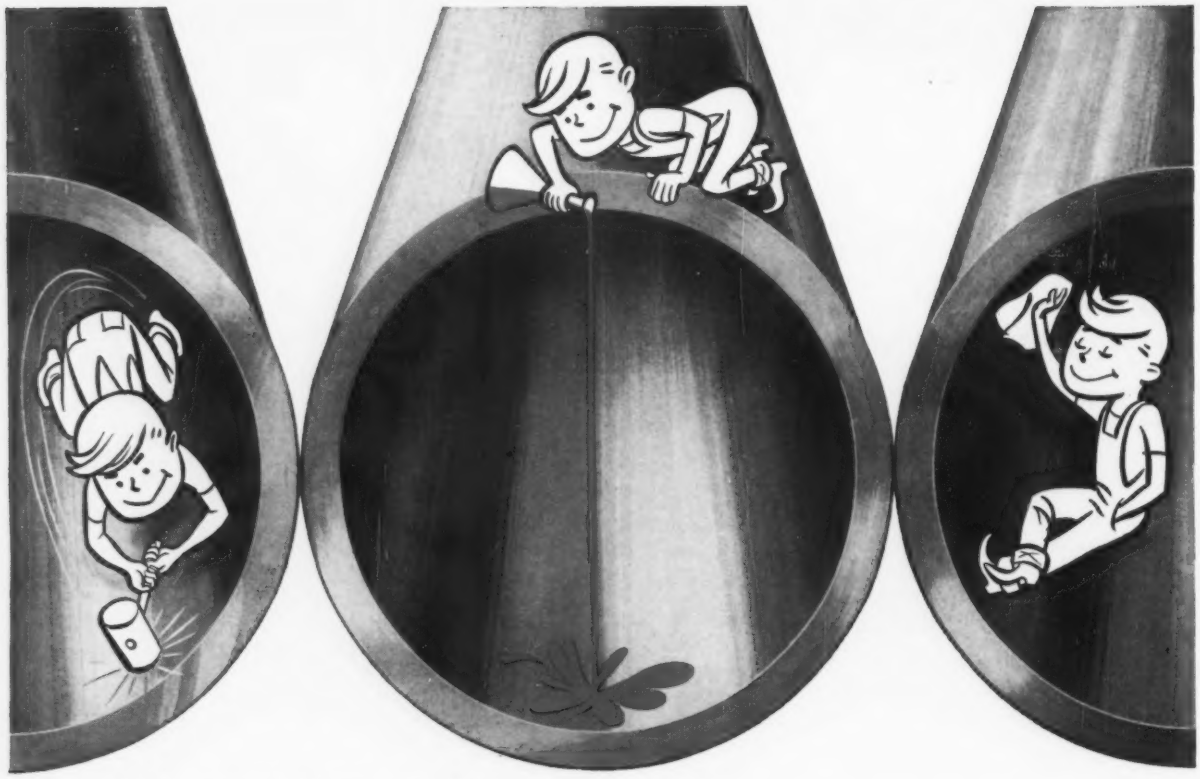
Vacuum is often the answer. In keeping with our leadership in the vacuum field, our group developed a high temperature, high vacuum furnace for sintering, annealing, and firing operations. This versatile modification of the well-received Hayes VacuMaster® features changes in valving, power requirements, and low voltage heating elements to extend temperatures into the 4500°F plus range. Scaled for full production, Model HT/HV affords advantages of rapid cycling, saturable reactor control, cold wall construction, and vacuum to 0.1 micron.

Atmosphere furnaces are needed, too. For processing with non-oxidizing atmospheres, our group also developed the M-Y Moly Element Furnace. Uses of this 3300°F unit: reducing tungsten and silicon, ceramic metallizing, and other ultra-high temp. work. Also in design is an oxidizing and reducing atmosphere electric furnace for the 3500°F range.

These new Hayes furnaces, developed under actual production conditions in our lab, are now serving industry on high temp. jobs perhaps similar to your own. Vacuum Furnace Bulletin 5709A and M-Y Furnace Bulletin 5805 give details. Write for copies.

C. I. HAYES, INC.
821 Wellington Avenue • Cranston 10, R. I.
Established 1905

"It Pays To See Hayes" for metallurgical guidance, laboratory facilities, furnaces, atmosphere generators, gas and fluid dryers.



The smoother surface of CONTOUR-WELDED* STAINLESS TUBING *gives it greater resistance to corrosion*

Recent tests prove: (1) *Contour-welded* tubing is smoother than any other tubing, and (2) this extra smoothness provides greater resistance to corrosion.

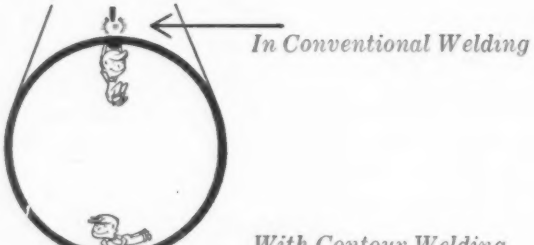
Here's how TRENTWELD® tubing, made by the exclusive *Contour-Weld* process, compares with other full-finished tubing:

- It's smoother than seamless because it's formed from uniformly rolled strip steel, whereas seamless is extruded from a billet.
- It's smoother than other welded tubing because the *Contour-Weld* process, patented by Trent, virtually eliminates the weld bead.

Other tests prove this smoother surface provides *increased resistance to corrosion* — because there are fewer focal points for corrosive attack. Not only that, the smoother surface ensures *longer fatigue life* and *less product incrustation.*

But get full details. Our free 48-page *"Trentweld* Manual" gives complete data on *Contour-Welded* tubing in sizes from ⅛" to 40" O.D., in stainless and high alloy steels, titanium, zirconium, zircalloy and Hastelloy.† Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In **CONVENTIONAL WELDING** of tubes, gravity pulls the molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

*With **CONTOUR-WELDING** the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

CONTOUR TRENTWELD

stainless and high alloy pipe and tubing

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisc. • MILLS: East Troy, Wisc.; Fullerton, Calif.

COMING EXHIBITS

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress—Metal mining-industrial minerals convention, Sept. 14-17, Denver, Colorado, Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago. Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22. The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers — Convention, Sept. 28-Oct. 1, Sherman Hotel, Chicago. Asso-

(Continued on P. 16)

New Kidde carbon dioxide portables awarded highest U.L. rating!

Belleville, N. J. — A spokesman for Walter Kidde & Company announced here today that four of the company's new portable fire extinguishers have been awarded the Underwriters' Laboratories highest ratings for their respective capacities. To those interested in fire safety, this means that, pound for pound, these new Kidde units have more fire-killing power than any other carbon dioxide extinguishers on the market today.

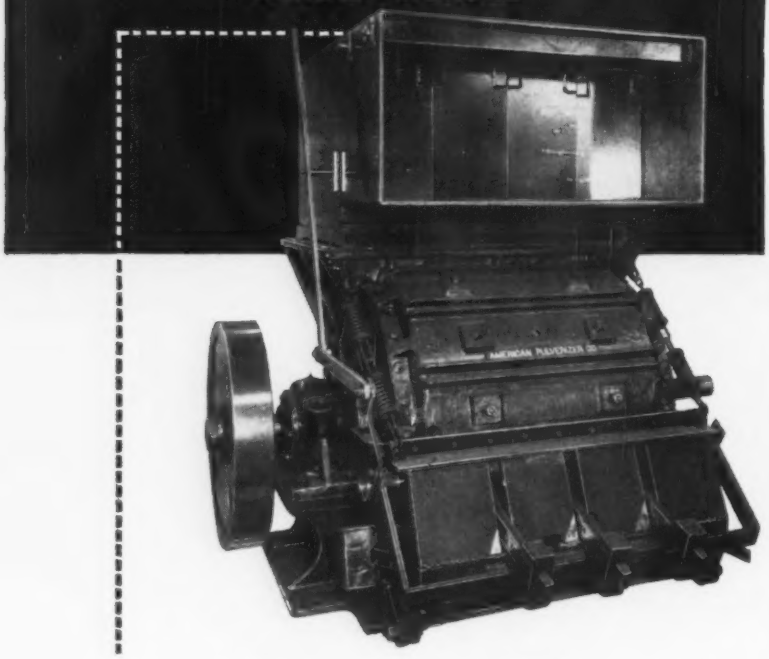
Available in 15 and 20 pound capacities, in either squeeze valve or trigger models, these power-packed Kidde units feature new hose and discharge horn assemblies, which are responsible for their extra fire fighting ability. The new assembly is supplied also with Kidde's 10 pound carbon dioxide portable which has a U. L. rating not exceeded by any other extinguisher of its capacity. This hose-horn combination is also being offered as a replacement unit for existing 10, 15 and 20 pound carbon dioxide units, and when attached will upgrade their effectiveness equal to the new ratings.

For more information on these top-rated Kidde carbon dioxide portables write Kidde today.

Kidde

Industrial and Marine Division
Walter Kidde & Company, Inc.
849 Main St., Belleville 9, N. J.
Walter Kidde & Company of Canada Ltd.
Montreal — Toronto — Vancouver

convert metal turnings into cash

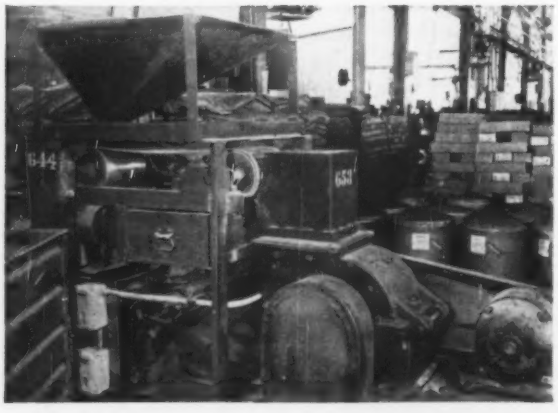


Long, curly, troublesome metal turnings, reduced in an American Metal Turnings Crusher, can produce additional profits for your plant.

Reduced to chip form, metal turnings bring $2 to $5 more per ton. Handling metal chips by shovel or pneumatic systems is easier, too, and chips require **75% less storage** space than bulky machine turnings. You'll recover more cutting oil from chips . . . up to 50 gallons per ton! More important, American Metal Turnings Crushers pay for themselves and produce substantial profits for years to come. Models available with capacities ranging from 1 to 50 tons per hour. To get all the details, write American today.

reclaim fused welding flux

One industrial plant saved more than $10,000 a year by using an American Welding Flux Crusher to regranulate fused welding flux. Write American for details.



American PULVERIZER COMPANY

ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS

1439 MACKLIND AVE. SAINT LOUIS 10, MISSOURI

EXHIBITS, MEETINGS

(Continued from P. 15)

ciation headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society — National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

National Assn. of Sheet Metal Distributors — Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

Truck Body & Equipment Assn., Inc. — Annual convention and exhibit, Oct. 5-7, Sherman Hotel, Chicago. Association headquarters. 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago. Association headquarters, 420 Lexington Ave., New York.

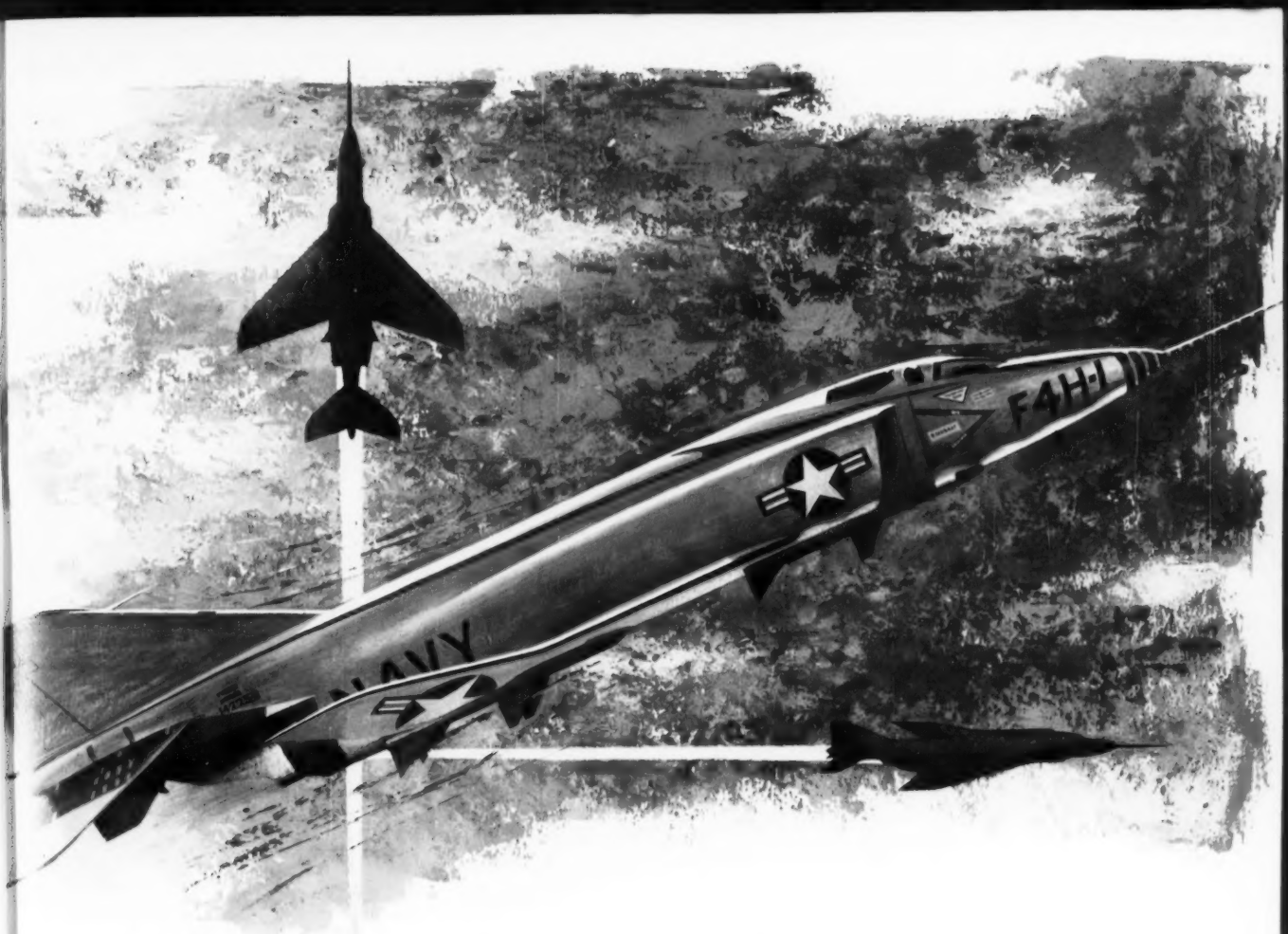
Society of Automotive Engineers—National Aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc. —Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

Conveyor Equipment Manufacturers Assn. — Annual meeting, Oct. 10-13, Grand Hotel, Point Clear, Ala. Association headquarters, One Thomas Circle, Washington, D. C.

American Society for Testing Materials—Pacific area national meeting, Oct. 11-16, Sheraton-Palace Hotel, San Francisco, Calif. Society headquarters, 1916 Race St., Philadelphia.

Wire Assn. — Annual convention, Oct. 12-15, Statler Hotel, Cleveland. Association headquarters, 453 Main St., Stamford, Conn.



The F4H, a U. S. Navy fighter plane that flies at better than twice the speed of sound, is built by McDonnell Aircraft Corp., St. Louis, Mo.

Titanium aircraft parts creep-formed with Bethlehem Cromo-High V tool steel

Titanium skin surfaces and titanium alloy rib sections for this supersonic fighter plane are creep-formed in dies made of Bethlehem Cromo-High V tool steel. It takes a fine grade of hot-work tool steel to handle this exacting job. The steel dies are heated to between 1000° and 1200° F in order to speed the forming operation. After the titanium part is forced into contour, the heat also serves to stress-relieve the formed section.

Here's one way we know all Bethlehem tool steels are sound

Ultrasonic sound waves, pitched so high you can't hear them, penetrate every inch of the Bethlehem tool steel billet you see here. The waves, relentlessly searching out any possible inner defects, are reflected on a screen. When the Bethlehem inspector gives his OK, you can rely on the soundness of every bar rolled from the billet.

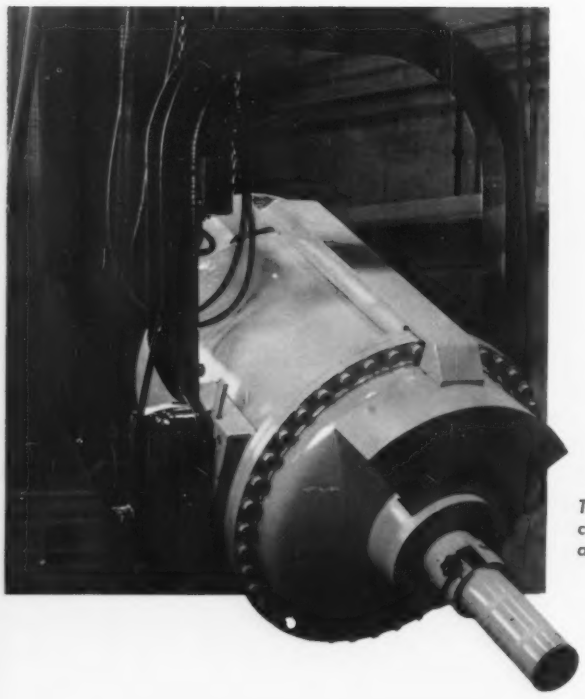
Today's steels require higher standards of inspection than ever before. We regularly perform both destructive and non-destructive tests, depending on specifications. Careful inspection, using the most modern testing techniques, is your assurance that Bethlehem steels will do their job.

BETHLEHEM STEEL

Probing welds of missile mast with 250,000 volts

There's not a chance that an unsound weld will escape the penetrating eye of this powerful X-ray machine. Here the X-ray probes into welds for component sections of a tower mast for a Titan missile. The mast, which supports fuel injection apparatus, must withstand the extremely high stresses and forces of a missile launching.

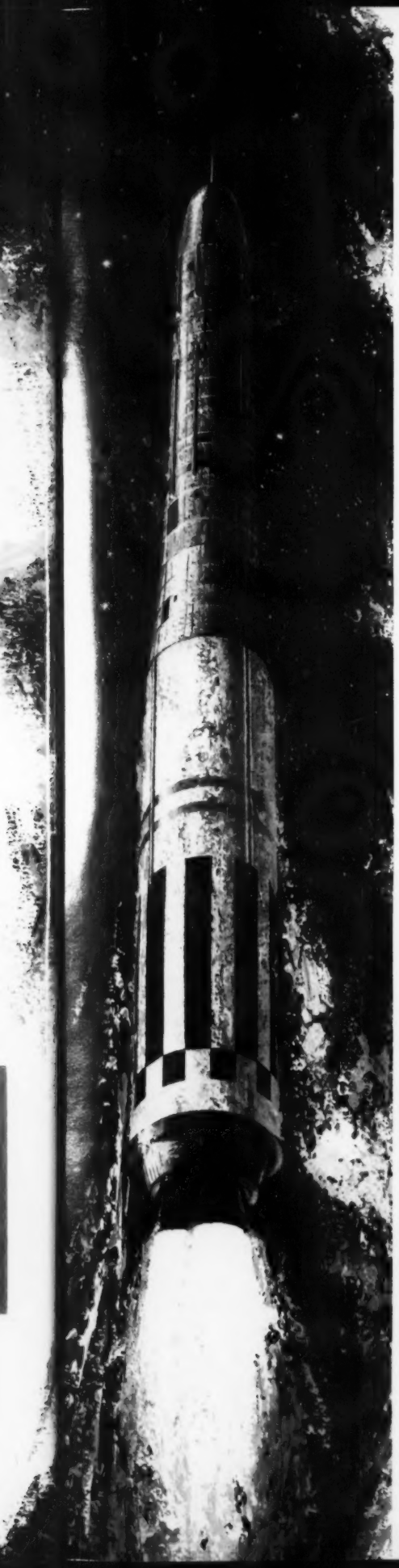
Radiography, like the ultrasonic test, is valuable in examining subsurface structure. The quarter-of-a-million-volt portable X-ray machine, shown at the top of the page, helps to assure that welds made in Bethlehem's shops are completely sound.



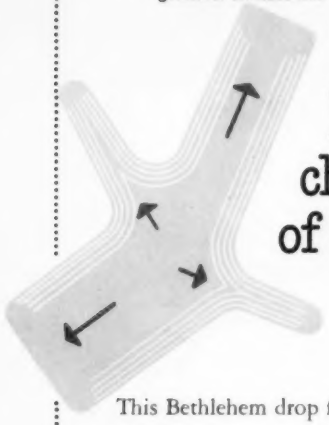
This 1,000,000-volt X-ray machine can penetrate several inches of steel, and is a valuable tool in the inspection of Bethlehem castings.

This X-ray negative of a weld made on the missile tower mast shows that the metal is sound.

BETHLEHEM STEEL



"Flow lines" are controlled by die design to impart highest strength and toughness where greatest stresses will occur.



Magnetic tests check strength of aircraft-quality drop forgings

This Bethlehem drop forging is a wing-to-fuselage fitting for a jet aircraft that flies at speeds approaching twice the speed of sound. The 109-lb forging must stand intense vibratory and torsional stresses. Aircraft-quality steels call for rigid control and careful inspection at every stage of production.

Magnetic testing indicates both surface and near-surface discontinuities. Magnetic powders, applied wet or dry to the magnetized forging, concentrate at any point of flux leakage, revealing any minute cracks, seams, laps, tears, etc. Experienced Bethlehem inspectors are key members of the production team; when they complete their series of careful examinations, we know that every drop forging we ship is sound, uniform, and made to specifications.

"Magnaglo" inspection is one of a series of tests to make sure no defects are present. Bethlehem makes drop forgings ranging from one to 250 lb in size.

BETHLEHEM STEEL

Bethlehem engineers will work with you on your steelworking problems

New research center underway at Bethlehem

Work is well underway on the new research laboratories in Bethlehem, Pa., which will provide the most modern facilities for work in mechanical engineering, process and physical metallurgy, mechanics, chemical engineering, ceramics, chemistry and physics, including nuclear studies.

Bethlehem Steels and Specialties

Here is a partial list of steels and specialty products in the Bethlehem line:

BARS AND BILLETS:
Carbon and alloy AISI grades
Concrete reinforcing bars
Leaded carbon and alloy steels
Special rolled sections

TOOL STEELS:
A grade for every job

FORGINGS: Drop, press, hammer and upsetter
Rolled-and-forged special sections

SHEETS: Hot and cold-rolled
Continuously galvanized

TIN MILL PRODUCTS: Electrolytic and hot-dip tin plate; black plate

PLATES: Universal and sheared

ROD AND WIRE: General and special-purpose types
Fine and shaped wire

WIRE ROPE AND SLINGS

FASTENERS: Standard bolts, cap screws, rivets
Special fasteners

STEEL PIPE:
Continuous buttweld
Electric resistance-weld

STRUCTURAL SHAPES

COLD-FORMED SHAPES

PALLET RACKS

WELDMENTS: Frames, tanks, housings, vessels

RAILS: Tee, crane, girder

CASTINGS: Carbon, alloy, and stainless steel
Grey iron; brass and bronze

How Bethlehem Drop Forges "The Octopus"— *Folder 662*
Highly-specialized production of an aircraft drop forging

Steel Plates— *Catalog 466*
Design information, metallurgical data and description of Bethlehem steel plates

Tool Steel Selector— *Booklet 513*
Recommendations which help to remove guesswork in selecting tool steels.

Publications Department
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA. M7

- ☐ Folder 662
- ☐ Catalog 466
- ☐ Booklet 415-C
- ☐ Booklet 366
- ☐ Booklet 513
- ☐ Folders 628, 669, 670

Also, I would like additional information on

_____

Name_____

Firm_____

Address_____

City and State_____

Quick Facts about Alloy Steel—*Booklet 415-C*
The fundamentals of alloy steels, compiled as a handy reference

Guide for the selection of carbon bars—*Booklet 366*
How to select the right grade and type of steel to fit your needs

High-Strength Steels—*Folders 628, 669, 670*
Mechanical and physical properties, working characteristics of three grades of Bethlehem high-strength steel.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Export distributor:
Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Folder 700 598, Printed in U.S.A.

...designed and built by...

UNITED®

HIGH SPEED
5-STAND
TANDEM COLD MILL

UNITED

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Offices at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Company, Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

Failure of any part of a missile—be it the mighty Atlas, Jupiter or Thor—can mean failure of the mission. That's why the complex connections in the ducting systems of these and other missiles are silver brazed. These connections must stand up under 6,000 psi; they are tested to 12,000 psi.

In lines made to specifications by Flexonics Corporation, Maywood, Illinois, silver brazing joins a corrugated flexible pressure carrier, a braid sleeve and a coupling nipple—all of stainless steel; it permits joining all of these elements of the assembly without danger of annealing the pressure-carrying flex or the restraining braid as welding might do.

Assemblies designed for 6,000 psi operating pressure are required to withstand a 12,000 psi test and take four times their normal operating pressure before failure. They may also be required to pass a flame test in order to meet specifications.

The silver-brazed connections are used on hydraulic and pneumatic systems, fuel drain lines and vent tubes. Some of these applications involve rigorous service with extreme pressure shocks accompanied by sudden elevations of temperature, which may go from −60° to 400-600° F in a matter of seconds.

A more "high level" endorsement of Handy & Harman silver alloy brazing is not available. On the ground or in the air, the qualities of this remarkable metal joining method apply; strength, ease of production, cost, gas and liquid joint tightness to name a few. The entire brazing story is yours merely for the asking. Inquiries and metals-joining "problem exposure" may be addressed to Handy & Harman, 82 Fulton Street, New York 38, N. Y. We welcome the opportunity to work with you.

Your NO. 1 Source of Supply and Authority on Brazing Alloys

HANDY & HARMAN

General Offices: 82 Fulton St., New York 38, N. Y.

DISTRIBUTORS IN PRINCIPAL CITIES

No Margin Here for joint failure!

Assemblies in ATLAS Missile **HANDY & HARMAN** Silver Brazed

'Intercontinental Atlas missile being made ready for launching.

Close-ups of missile section, showing silver alloy brazed ducting assembly.

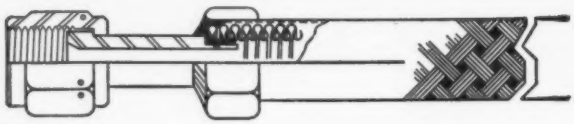


Diagram of pressure carrier.

FOR A GOOD START: BULLETIN 20.

This informative booklet gives a good picture of silver brazing and its benefits...includes details on alloys, heating methods, joint design and production techniques. Write for your copy.

"Been workin' her hard for 14 years ...she's as fast and accurate as the day she arrived"

NIAGARA SHEARS

Precision made Niagara Shears are built to cut with micrometer accuracy . . . *and to keep cutting that way.*

Thousands are in use, but comments are nearly identical. Makes no difference how hard they're worked. Three shifts a day, month after month, year after year . . . a Niagara Shear *continues* to be accurate.

"Don't have to change knife clearance"

No adjustments needed for cutting different thicknesses of stock . . . even at the same time . . . with consistently accurate, burr-free results. *And much longer knife life!* The secret is in the rigidity of Niagara's exclusive box section design. "Upped production 25%," says one user, "because we have fewer adjustments to make."

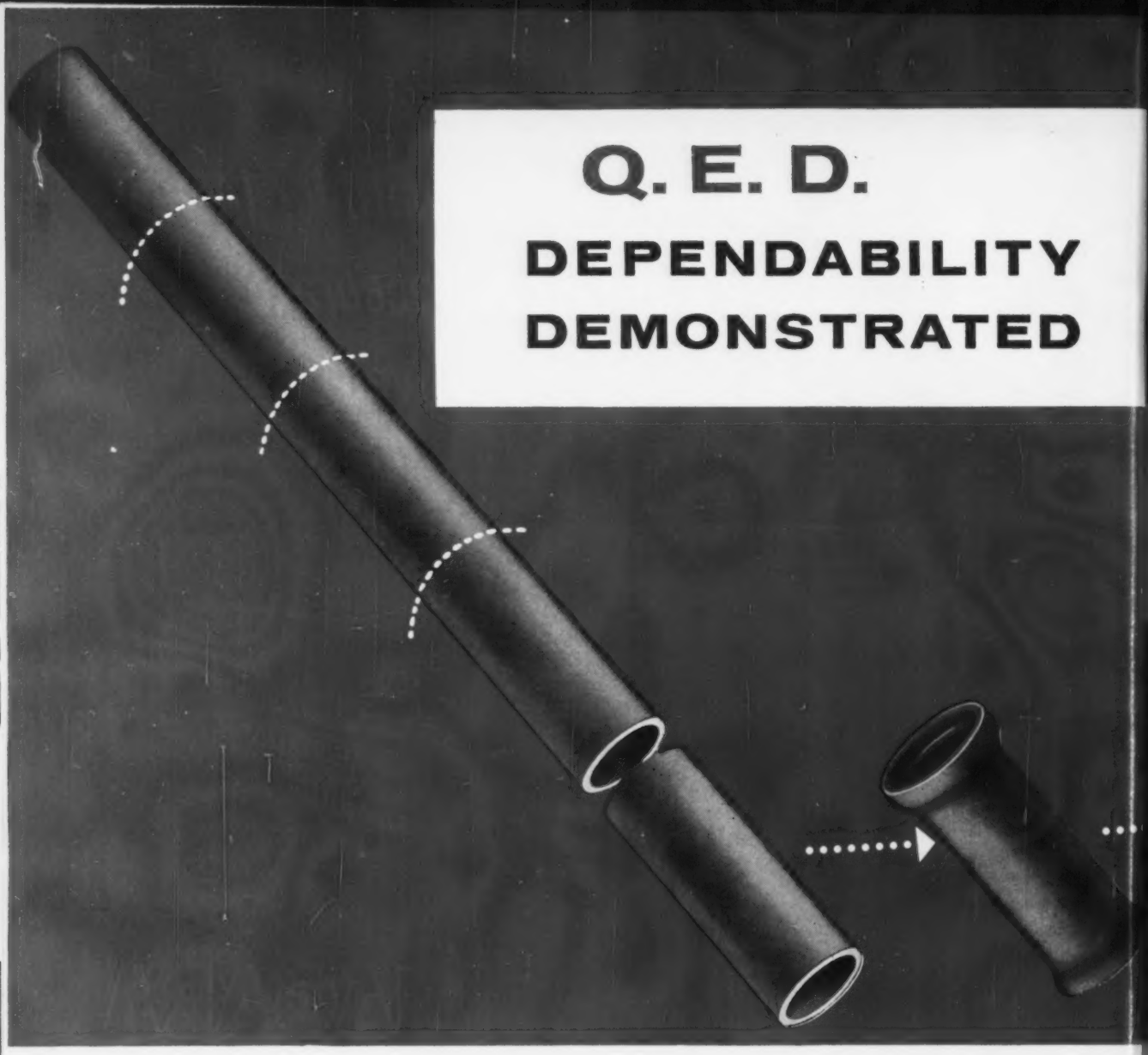
"Costs less to operate"

There's less to do, less to learn and less to go wrong. Never even have to worry about damaging the machine by forgetting to change the knife clearance. Once set, Niagara Shears need no further adjustment. "Been using Niagara's for 10 years . . . never had downtime for repairs or maintenance," says another user. Even after long, hard use when it becomes necessary to turn the blades or change knives, it's a very easy matter. Nothing like Niagara Shears for simplicity.

FACT BOOK FOR YOU

Bulletin 69 is filled with customer reports on Niagara Shear performance. You'll value it. Write today.

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y. *District Offices and Distributors in Principal Cities*



Q. E. D.
DEPENDABILITY DEMONSTRATED

Now... basic characteristics of Metal Mold Centrifugal Casting contribute to the reliability of new Lacrosse Missile

THE ARMY'S LACROSSE MISSILE

U. S. Pipe supplies the barrel nozzle in a Cr-Mo-V low alloy steel analysis, heat treated to the following minimums: 95,000 psi tensile strength, 75,000 psi yield strength, and 10% elongation. This alloy is specifically designed to meet exacting military specifications. Various other analyses in carbon, alloy and stainless steel are produced.

Centrifugal casting, a direct production approach to quality, is now finding new and increasingly useful applications in rocketry and missile engineering.

U.S. Pipe, for example, supplies the alloy steel barrel nozzles for the Army's Lacrosse Missile as semi-finished, partially hot-forged lengths. These production pieces are being supplied to The Martin Company, Orlando, Florida — prime contractor for the Lacrosse, and to Parish Pressed Steel, Reading, Pennsylvania — subcontractor to The Martin Company. The contractors then finish machine them for assembly in the propulsion units.

Centrifugal casting offers ordnance design engineers several outstanding advantages:

1. Versatility. Many different alloy and stainless steel analyses, sizes and contours can be produced starting with a hollow billet.

2. Dependability. Years of experience in producing metal mold centrifugal castings assures high quality and reproducibility.

3. Economy. Maximum utilization of the *right* material produced with a minimum of processing to achieve overall efficiency.

Can these basic qualities meet the requirements and lower the cost of your material needs? Write today and outline your particular problem.

Size Range & Composition Flexibility
Outside Diameter—6" to 60" • Wall Thickness—⅜" and up
Length—Up to 25'
Types of Steel Cast, Carbon, Alloy and Stainless—all standard AISI and ACI grades.

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SALES OFFICES: BURLINGTON, BOSTON, BIRMINGHAM, CHICAGO, CLEVELAND, LOS ANGELES, NEW YORK, PITTSBURGH, SAN FRANCISCO, ST. LOUIS

There is a Threading Specialist IN YOUR SHOP

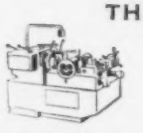
He is your Landis Service Representative. Although not in your plant every minute of every day, a phone call or wire will bring him to you promptly. Down time, improper chaser life, failure to meet specifications . . . these are the types of problems your Landis Service Man helps you to avoid.

These Service Representatives, located throughout the country, can help you in many ways. For example, they can show you how to best use your threading equipment (whether the operation is by cutting, grinding, tapping, or rolling) to save you time and money. They will aid in translating the general sales literature data into specific information on producing your particular threading job. They can describe the special equipment that has been designed for threading unusual and difficult-to-handle workpieces. By working with our Engineering Department, they are able to provide additional information on similar equipment for your special threading requirements. These are but a few of the many ways the Landis Service Representative can help you.

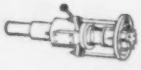
All LANDIS Equipment is guaranteed to produce threads to meet the degree of accuracy and production for which it is sold. Our extensive staff of Service Men, plus the above guarantee, emphasize the value LANDIS assigns to satisfied customers. We sell performance, not just products, and you become an expert on threading, when our experienced Service Representatives are at your service.

LANDIS *Machine* COMPANY WAYNESBORO • PENNSYLVANIA

THE WORLD'S LARGEST MANUFACTURER OF THREADING EQUIPMENT


Threading Machines

Die Heads—Rotary & Stationary

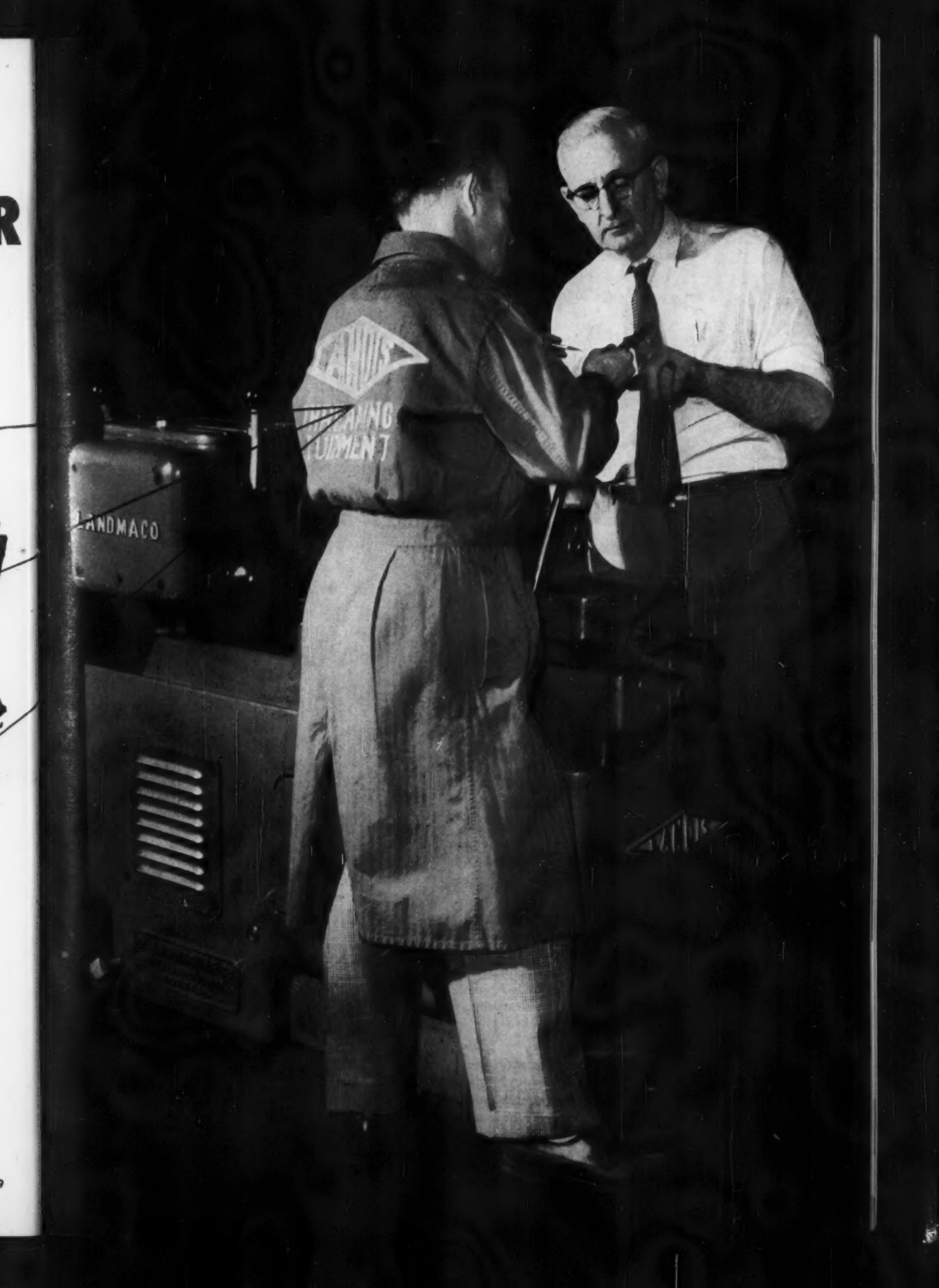

Taps—Collapsible & Solid Adjustable

Centerless Thread Grinding Machines

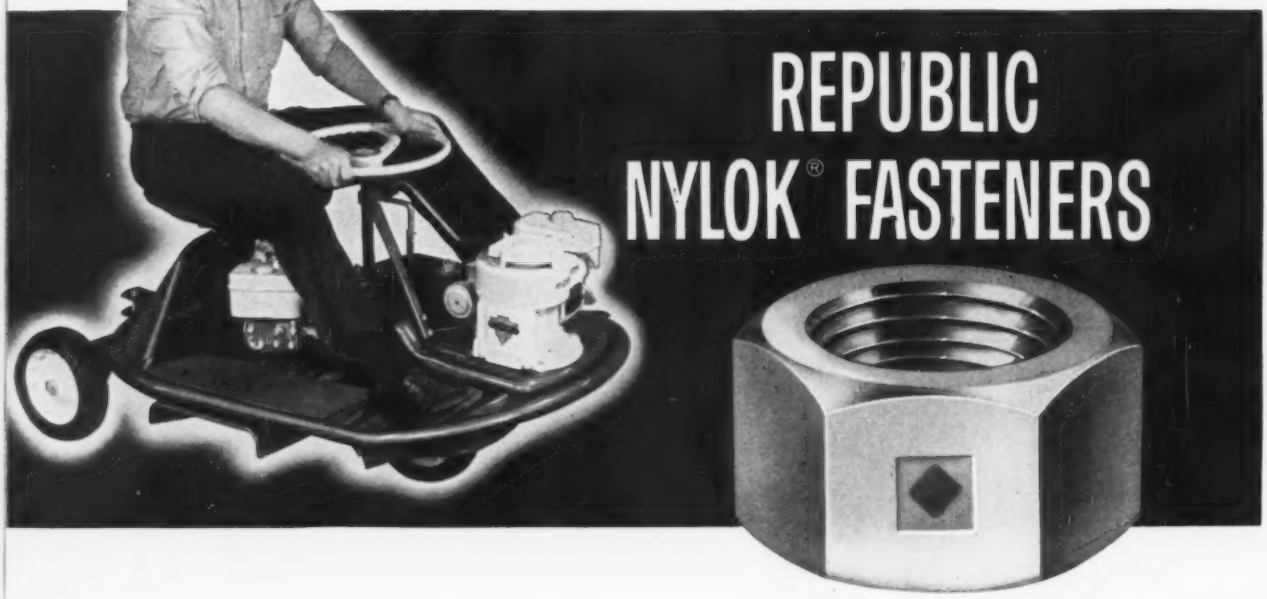
Thread Rolling Tools

Thread Rolling Machines

541


LANDMACO

Where secure holding power is needed most...



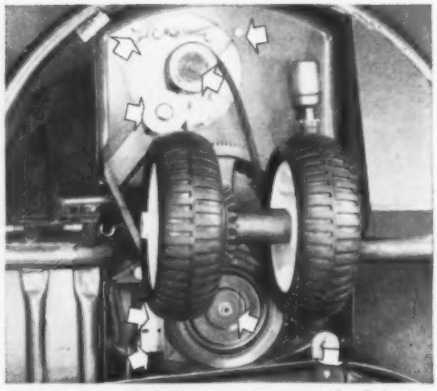
Users from coast to coast know about the quality construction of Roberton Twin Power Riding Mowers, made by Roberton Manufacturing Company, Chicago, Illinois.

Efficient riding mowers like these, constantly used to cut grasses of varying thickness and height, are subject to intense vibration. Yet their *two* power units are firmly held in place for long, dependable service by a total of 44 Republic Nylok Fasteners.

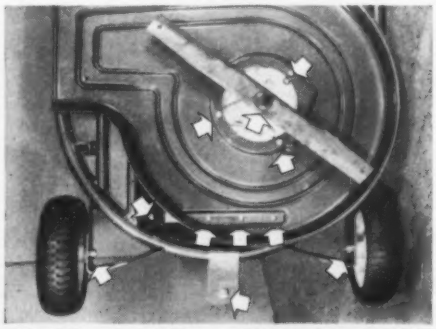
Republic Nylok Fasteners have a special nylon insert that assures positive locking at any position, even under severe shock, vibration, or tension. When the fastener is assembled, this nylon plug exerts pressure in a lateral direction, preventing all play, and utilizing the metal-to-metal contact of the opposing threads for locking.

Republic Nylok Fasteners provide maximum holding power under all conditions, whether seated or not; and they can be used repeatedly. One of their unique advantages is the "plastic memory" of the nylon plug—the tendency of the nylon to recover its original shape after assembly. This "growth" into the threads actually results in a tighter locking action, after a period of time, than when the fastener was first assembled.

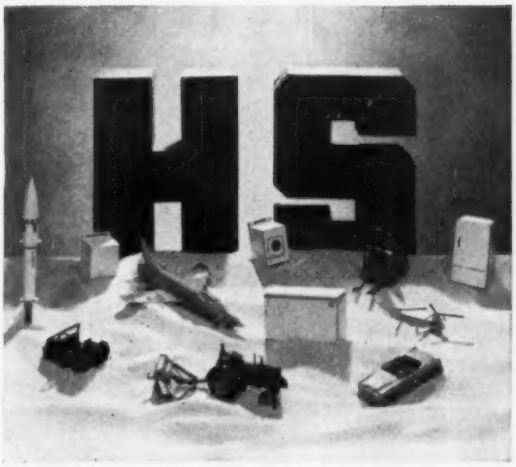
The nylon insert is unaffected by age or cold, has high resistance to heat, and very low moisture-absorption rate. These are but a few of the reasons why Roberton Manufacturing Company uses Republic Nylok Fasteners in its advanced line of power mowers. Advantages like these can pay dividends in *your* application, too. For full information, contact your Republic representative, or mail coupon.



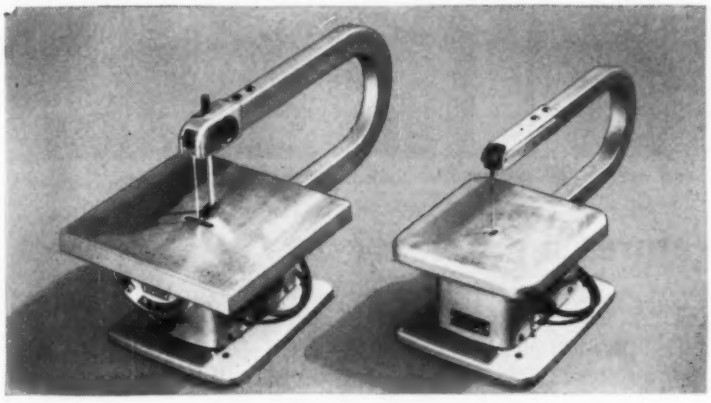
DRIVE UNIT, which furnishes motive power for Roberton Mower is securely held in place by Republic Nylok Fasteners as indicated by arrows. Engine remains tight against base even after years of hard service.



POWER FOR CUTTING is provided by a second, independent engine. Imagine the vibration set up by the swift-moving blade shown. Yet Republic Nylok Fasteners hold engine, wheels, and other parts, firmly in place.



REPUBLIC'S NEW HIGH STRENGTH POWDER, Type HS6460, opens the way to new markets for new applications using sinterings for highly stressed parts. Type HS6460 can be used with existing operating equipment. It provides a minimum tensile strength of 60,000 psi at 6.4 density as sintered, and 100,000 psi heat treated. Type HS6460 maintains its dimensional characteristics after sintering—less than .004 inches per inch shrinkage from die size at 6.4 density. Available in production quantities up to and including 12 tons, or in multiples thereof. Mail coupon for technical data sheet on Type HS6460 Powder.



EASY, EFFECTIVE FABRICATION is a characteristic of Republic Galvannealed Steel Sheets. Severe brake forming, shown above as done by Fogel Refrigerator Company, Philadelphia, does not affect their corrosion-resistant, paint-adhering qualities. Republic Galvannealed Sheets readily take shearing, punching, spot welding, and many other fabricating operations. Mail coupon for more facts.

SAVINGS IN A KEY PART are realized by Syncro Corporation, Oxford, Michigan, by using Republic ELECTRUNITE® Mechanical Tubing in the manufacture of jigsaws. Previously they used a casting for the blade-yoke, which requires a severe bend. ELECTRUNITE Square Tubing was recommended for one model, rectangular tubing for the other. Results: reduction in weight of the blade-yoke, and improvement in appearance of the product, with savings in time, materials, assembly, and shipping costs. For more information mail coupon below.

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World's Widest Range of Standard Steels and Steel Products

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Please send additional information on the following:

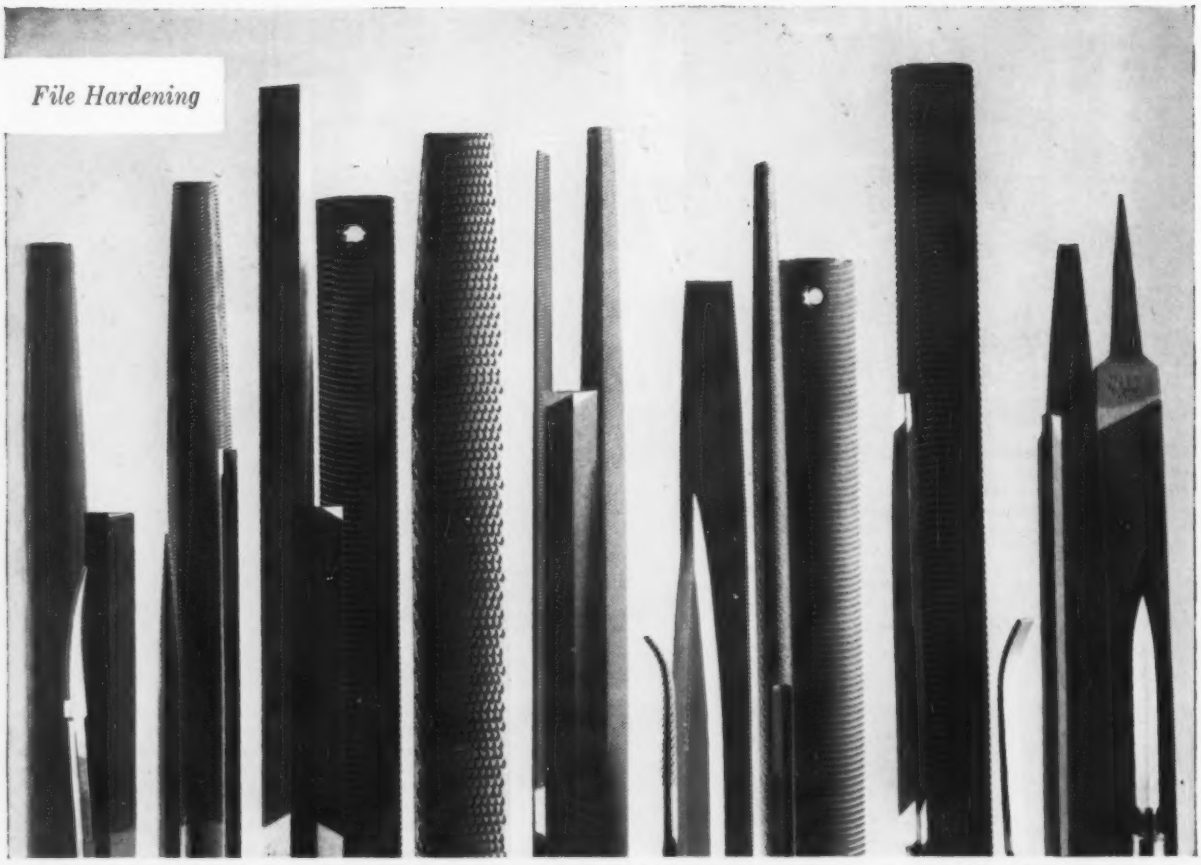
☐ Nylok Fasteners ☐ Galvannealed Sheets
☐ Type HS6460 Powder
☐ ELECTRUNITE Mechanical Tubing

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____



Nicholson File Co.: Many thousand files are hardened daily; Speedomax control helps keep rejects to absolute minimum.

Control of lead pot temperatures a problem?

Not at Nicholson File Co., Anderson, Ind., where Speedomax® H controllers are holding critical hardening temperatures to within ±5 F. With file hardening an art, Speedomax H permits a skilled operator to devote all his attention to producing a hard, straight, undistorted file. Since installing automatic control, *rejects have been minimized . . . pot life has increased substantially . . . new-operator training time appreciably reduced.* Rugged, compact and completely reliable, Speedomax H is providing similar process benefits on numerous other heat treat operations . . . is helping both to modernize production and to produce a quality product. Whatever your heat treat, it'll pay you to investigate Speedomax H! For details, contact your nearest L&N office or write 4956 Stenton Avenue, Philadelphia 44, Pennsylvania.

With automatic control holding pot temperatures to within ±5F, skilled operators can devote all their attention to producing files which consistently meet maximum hardness and straightness specs.

LEEDS Instruments NORTHRUP Automatic Controls • Furnaces

3M Announces... **NEW**...the miracle production cleaning material...

SCOTCH-BRITE®

Cleans better, cleans faster, costs less!

We'll prove it on your toughest cleaning jobs!

What do you have to clean?—raw stock, product parts, production equipment? We've tested and proved "SCOTCH-BRITE" Brand Cleaning Material for them all—for example, conveyors, tanks, bins, and vats, on flat metal, tubing, glass molds, printing plates, printed circuits, on metal/plastic combinations and many others.

You've never seen anything like new "SCOTCH-BRITE" material: a tough, springy, web-like pad of nylon filament with small working particles of abrasive mineral. Lightweight, long-wearing, easy to bend, fold or cut to shape. Let us show you how easily "SCOTCH-BRITE" loadings can replace your present power brushes, on almost any fixed or portable hand or automatic cleaning equipment!

MINNESOTA MINING AND MANUFACTURING COMPANY

3M COMPANY

...WHERE RESEARCH IS THE KEY TO TOMORROW

The term "SCOTCH-BRITE" is a registered trademark of 3M Co., St. Paul 6, Minn. Export: 99 Park Ave., New York 16. Canada: London, Ontario

We'll prove it with your present equipment!

See for yourself how "SCOTCH-BRITE" Brand Cleaning Material outcleans and outlasts wire brushes, fiber brushes, steel or other wools—and at lower initial cost, too! It wipes away dirt, grease, wax, stains, scale or oxides; follows complex contours that bristles can't reach—and rinses clean without rusting or staining!

We'll prove it—at no obligation to you!

3M Co., 900 Bush Ave.,
St. Paul 6, Minn., Dept. AAT-89

Please call to arrange a free demonstration of "SCOTCH-BRITE" material on our cleaning operations.

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POSITION_____

COMPANY_____

ADDRESS_____

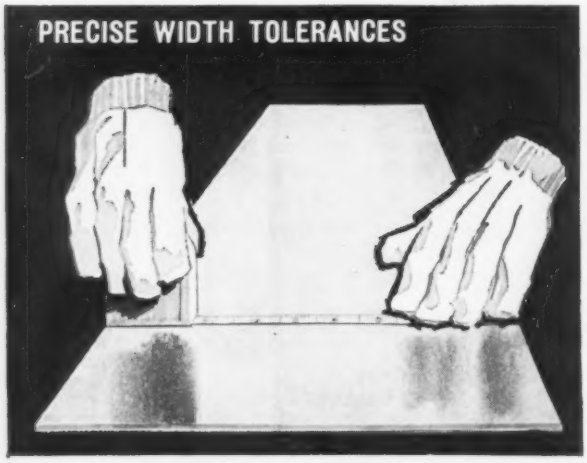
CITY_____ ZONE___ STATE_____

Where precision is important...

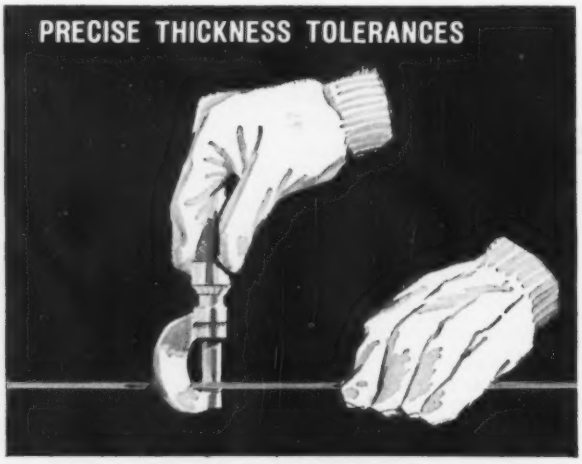
use USS Amerstrip, the "quality-

USS Amerstrip is a specialty product, rolled in quantities that permits production on precision machines, tailored to the customer's product specifications. When you use USS Amerstrip you get seven important "quality controls" not obtainable with other manufacturing methods.

The finish you get on your Amerstrip order has been specially prepared to meet *your* product's needs.



If your fabricating machines require a special width strip that's just what you'll get with Amerstrip. USS Amerstrip can be produced in any width under 24 inches . . . well within exacting tolerance limits.

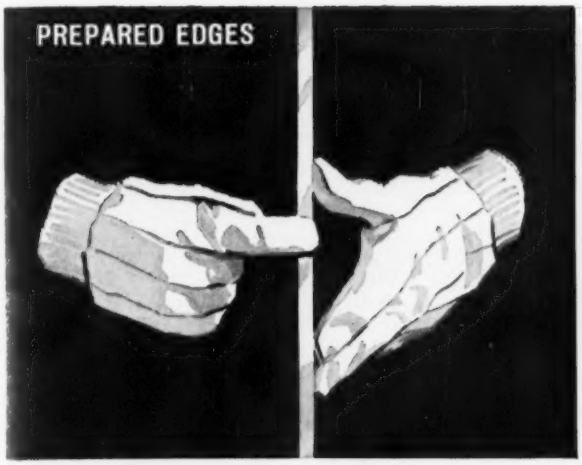


USS Amerstrip can be supplied in the thickness your machines demand. USS Amerstrip is fabricated on large production runs down to thickness tolerances as close as plus or minus .0005 inches.

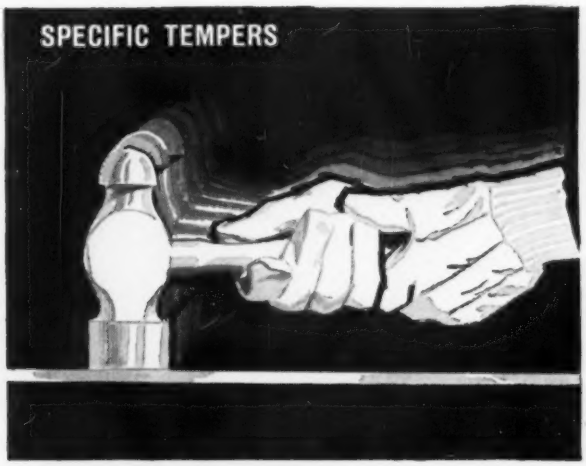
American Steel & Wire representatives are experts in the fabrication and application of USS Amerstrip Cold Rolled Strip. Whenever you have a need or problem involving cold roll let these experts show you how USS Amerstrip can do it better. Get in touch with our nearest representative or write to American Steel & Wire, Dept. 9171, 614 Superior Ave., N.W., Cleveland 13, Ohio.

USS and Amerstrip are registered trademarks

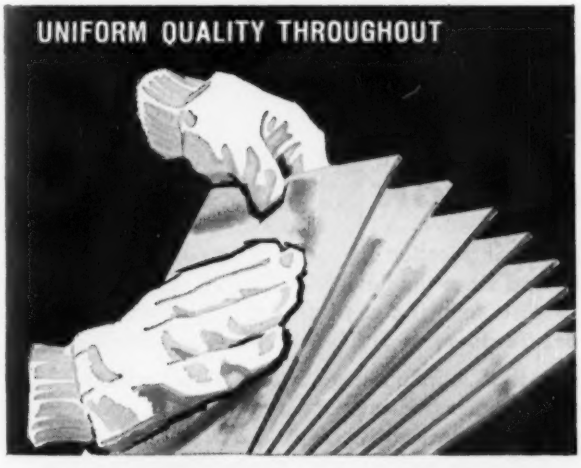
controlled" cold rolled strip steel



Because USS Amerstrip is produced in precision, order-size quantities, it can be supplied with the edge finish you need... square, standard, round, full round or bevel.



Whether your product must undergo a deep draw or other severe forming operation or require a special temper for rigidity, you'll get the exact temper you need when you order USS Amerstrip.



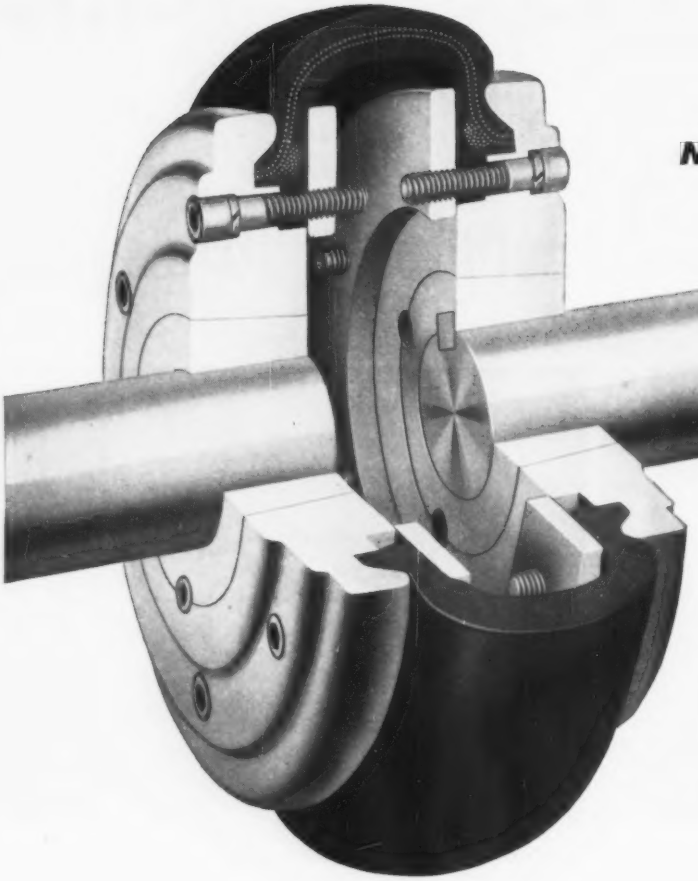
Whatever the size of your order... very large or very small, every coil of USS Amerstrip will be uniform in finish, in temper, in width and thickness. The use of USS Amerstrip will assure continuous production and high yields.

DESIGNED FOR END USE

This is really the sum total of all these other advantages. Because USS Amerstrip is "Quality-Controlled," because it is engineered to meet your needs, it assures you smoother, faster operation; a better, more salable finished product.

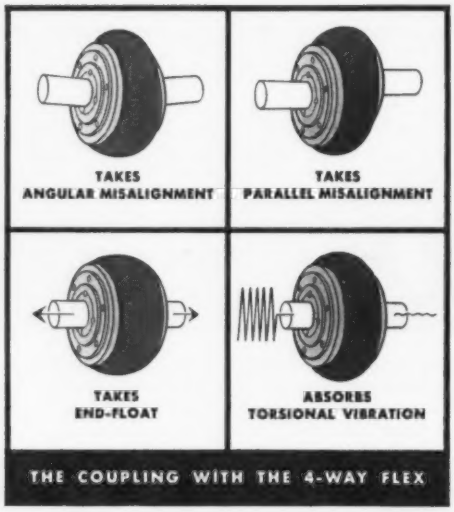
American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, New York



NEW!

DIFFERENT!



DODGE

Para•flex

FLEXIBLE CUSHION COUPLING

THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment *or any combination of all three.* Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

Here is a new type of performance—made possible by the development of a tire-like flexing element. Synthetic tension members, bonded together in rubber, give this element the stamina and dependability of modern, high-speed, high-load, shock-absorbing truck tires—and the ability to respond magically to all manner of changing shaft conditions.

Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine.*

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 825 hp at 1200 rpm. Call your distributor for early delivery to *make your own test.* You'll witness something revolutionary!

DODGE MANUFACTURING CORPORATION, 800 Union, Mishawaka Ind.

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

Specialties
of the House
ROEBLING is a specialist in galvanizing, with practically unmatched facilities for producing galvanized wire in enormous quantities and in complete size ranges. Hot galvanized is available in sizes from .283" to .035". . . Roegal (drawn galvanized) from .187" to .005".
You pay for the best when you buy galvanized wire. Make sure you get it—specify Roebling! Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, N. J.
ROEBLING
Branch Offices in Principal Cities
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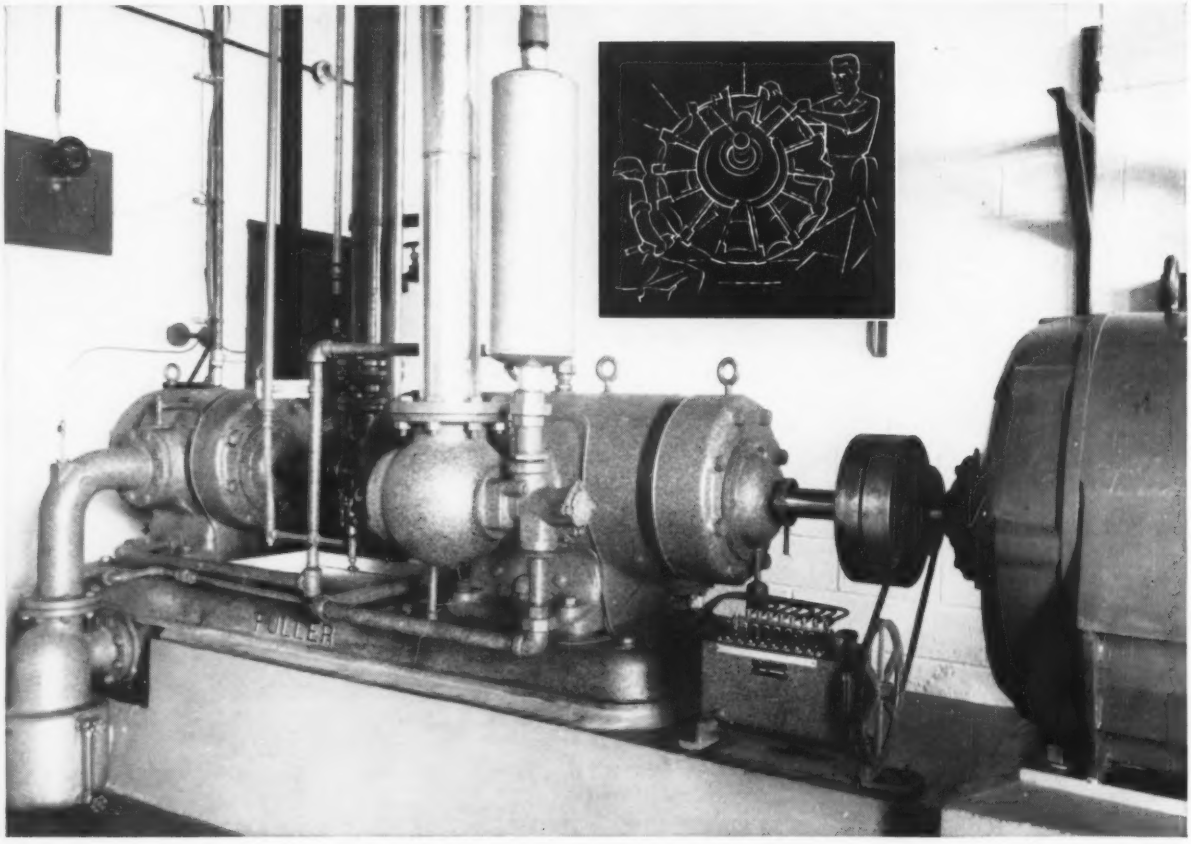
Roebling... Your Product is Better for it



WHY DID AIRWORK SPECIFY A FULLER AIR COMPRESSOR?

Here's what the Vice President-Operations of Airwork Corporation, one of the nation's leading aircraft overhaul companies, writes about Fuller Model C-150-150H Rotary Air Compressors.

"We were running out of air capacity, and had decided that we would like to get rid of the maintenance problems inherent in a piston type air compressor.

"The Fuller compressor with its fewer moving parts and favorable price range met our basic requirements.

"We then checked on Fuller compressor performance through our close contacts with a leading manufacturer of aircraft engines. Their opinion was very favorable. We think Airwork has made the right decision."

Here are the features that sold Airwork on a Fuller Compressor:

- Wide seal between rotor and bottom of cylinder, assuring high volumetric efficiency.
- Rotary design assuring vibration-free flow of air.
- Direct drive.
- Compact space-saving installation.
- Simple foundation.
- No valves to leak or seats to grind.
- Few moving parts, keeping maintenance time to minimum.
- Designed for continuous duty service

When your plant needs reliable air power, call on Fuller. To get all the facts on Fuller Rotary Compressors for capacities up to 3300 C.F.M. and pressure to 125 pounds, write today.

Fuller

FULLER COMPANY GENERAL AMERICAN TRADE MARK

FULLER COMPANY

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122 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Birmingham • Chicago • Kansas City • Los Angeles • New York • San Francisco • Seattle

PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

Call Crucible for stainless of uniform excellence

The lustre of Crucible stainless is achieved through precision-rolling on modern mills. Uniform physical properties are maintained by checking each heat — while electronic measuring controls ensure accurate gauge. Such methods produce coil after coil of uniform excellence. For stainless in all gauges down to .010" and in all strip widths, call or write: Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

CRUCIBLE STEEL COMPANY OF AMERICA

CANADIAN DISTRIBUTOR — RAILWAY AND POWER ENGINEERING CORP., LTD.

SKF RACES *Against Time...*

with the

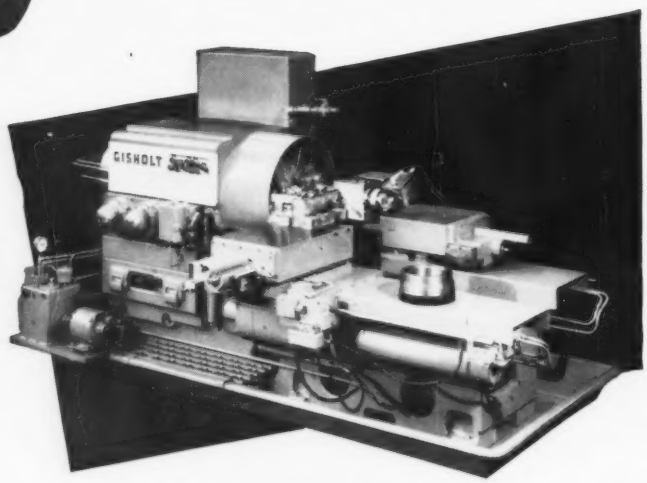
GISHOLT NO. 24 HYDRAULIC AUTOMATIC LATHE

When it comes to fast production of top quality spherical roller bearing races, SKF doesn't fool.

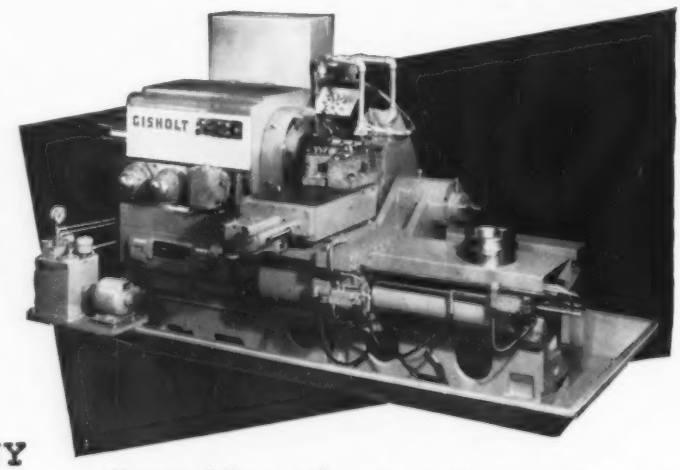
These big Gisholt No. 24 Hydraulics remove 34 lbs. of metal in two operations in a total of only 2.80 minutes' machining time on each of two machines. All cutting is on 52100 bearing steel and done at speeds of 325 to 350 f.p.m.

Speed is important, of course. But precision is the governing factor. How the Gisholt No. 24 does the job is a story that might mean real savings for you, too.

The No. 24 Hydraulic Automatic Lathe is a larger version of the famous No. 12 that has an outstanding success record on hundreds of jobs. If you have large volume precision work up to 24″ diameter, the Gisholt No. 24 is the machine to investigate. Write for full information.



First Operation: Chucked on OD with 3-jaw hydraulic chuck, part is turned up to the jaws, faced, chamfered, bored and bore radius formed. Cam relief on rear tool block turns boring bit clear of workpiece as it is withdrawn.



Second Operation: Part held on expanding arbor by hydraulic pressure is finish turned, faced, chamfered and bore radius formed. Special rocker arm type carriage at rear tips in shaving tools to form both roller grooves with feed of .003″ to .0045.″

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

MASTERLINE GISHOLT SINCE 1887 GISHOLT

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY-REBUILT MACHINES WITH NEW MACHINE GUARANTEE

Hydraulic Cylinder Manufacturer Specifies

Loading a minimum quantity of Ostuco tubing at the Shelby mill — in this instance only 150 feet.

"When you make hydraulic cylinders in 11 bore sizes . . . dozens of different pressure ratings . . . a variety of wall thicknesses and analyses — you've got a man-size tubing inventory problem.

"That's why we switched to Ostuco tubing made to our *exact specifications.* We like its availability in truly *small minimum quantities.* And with its consistently close tolerances, shipment after shipment, Ostuco tubing has *cut our machining time over 50 percent . . .* "

This is an actual case history of a manufacturer with a severe inventory problem. He required special tubing grades in minimum quantities. If you're faced with a similar situation, it's time you contacted your Ohio Seamless representative, listed in the Yellow Pages, or the mill at *Shelby, Ohio — Birthplace of the Seamless Steel Tube Industry in America.*

AA-5843

OSTUCO SHELBY OHIO — OSTUCO TUBING

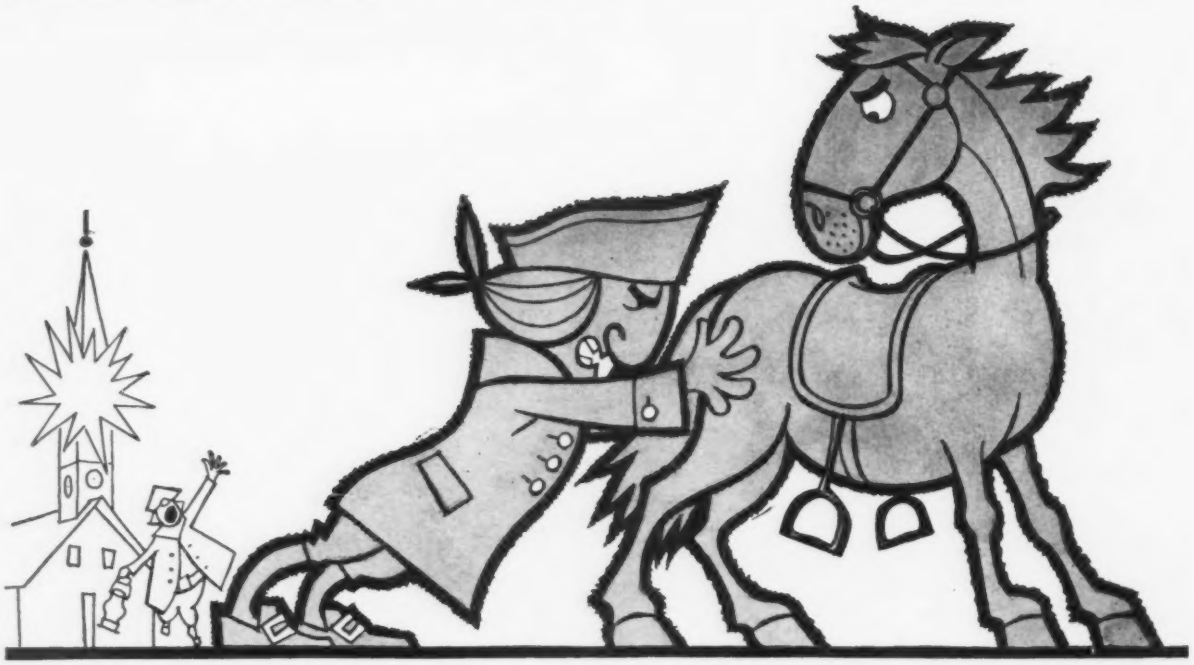
OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Miami, Moline, New Orleans (Chalmette), New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Rochester, St. Louis, St. Paul, Salt Lake City, Seattle, Tulsa, Wichita CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York

Man's Eternal Struggle with the Machine



THE REQUIREMENTS OF THE SPACE AGE DEMAND MORE FROM MACHINES AND TECHNIQUES THAN EVER BEFORE

Will the conquest of space wait while you make new machines work right?

Hardly! Not when the competition is boasting they'll bury us all.

Your job is to produce missiles and space craft. That's a full-time job in itself. Your responsibility for specifying equipment and processes only adds to that work-load. Obviously, you can't afford to be buried under new machines that can't be qualified and certified in the shortest time with the least expense and effort.

Sciaky knows you have to produce on time and to the most rigid specifications. That's why Sciaky's responsibility just *begins* with equipment design and manufacture. That's why Sciaky welding machines are fully tested and proved to do *your* job *before shipment*. That's why Sciaky machines are commonly installed, qualified, and certified in the shortest possible time. And, that's why Sciaky Service Engineers are ready to back you fully.

Why take less than the full advantage of talking with a Sciaky Application Engineer when you are considering equipment. No obligation, of course.

The aviation industry has been taking that advantage ever since Sciaky machines made it possible to resistance weld aluminum in production. The entire Sciaky organization has been built by satisfying people just like you. As a result, Sciaky has produced almost all the basic advances to the technology of resistance welding since the year 1917.

SCIAKY

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THERE'S BUTCH TRYIN' TO TALK THE SWEDE INTO CUTTIN' HIS HOT METAL AGAIN.
THE WAY HE ACTS YOU'D THINK THE OLD MAN PASSES OUT CIGARS FOR FIRST TAPPIN'.
YEAH, HE'D RATHER TAP AHEAD OF THE GREEK THAN MAKE FULL BONUS.
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The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

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THE STEEL LABOR IMPASSE is almost as much a stalemate as the adjourned Geneva Conference. From the looks of things now, it will take pressure from the President to bring about a break. Some high level Administration people feel it must be ended before the impending visit of Premier Khrushchev to the U. S.

THE DEFENSE DEPARTMENT is preparing to order setasides of steel for defense jobs from the 15 pct of the industry not shut down by the strike. The Pentagon says, however, there is no immediate need. Regulations are being drafted just in case.

DEFENSE STEEL NEEDS do not appear to be great. The Pentagon points out that total defense procurement needs take only about 2 pct of total steel capacity. But much of this is special steel and setasides, if ordered, could cause added supply problems.

STOCKPILED ALUMINUM THREATENS to be a hot issue. The House and Senate can't agree on whether the Atomic Energy Commission should be directed to use stockpiled aluminum in fiscal 1960. The outcome could reflect on the entire stockpile accumulated under the Defense Production Act.

NUCLEAR POWER IS GETTING more attention from top metalworking companies. But on the commercial side, no one is getting rich in the field. The big payoff for systems designers is probably years away. Furthermore, fabricators have faced highly competitive bidding in efforts to get into the nuclear field. Naval reactors will provide the biggest market for the next five years.

GAS UTILITIES AND PIPELINES will spend a record $1,859 million for construction this year. The American Gas Assn. projects a gradual climb in industry spending through 1962 at least. While linepipe will get the greatest share of the outlays, millions will be spent on construction and related transmission equipment.

ALUMINUM CONTINUES TO PICK UP new automotive markets. Aluminum parts with precision-welded zones of super hardness are expected to find many automotive applications where localized hardness, wear and heat resistance are needed. Some prospects: Piston ring grooves, brake drums, valve seats and sheaves.

NASA SPACE PROJECTS ARE ADDING UP to totals that demand respect. The National Aeronautics and Space Administration (NASA) has let R & D contracts amounting to $183 million since its formation in October of 1958. Aerospace Industries Assn. lists these programs: Project Scout, Project Vega, Mars Expedition, nuclear engines and meteorological satellites.

Bridgeport Ultra Fine Grain Brass puts more allure in a lure ...and more profit in your product!

Clear, polished or painted, "Dardevle" fishing lures, made by Lou J. Eppinger Mfg. Co., Detroit, Mich., are world famous for their deadly, sure-fire allure.

There's more than one reason for this magic appeal. But to designers and production men, the most important is the Bridgeport Ultra Fine Grain Brass from which the lures are made. This ductile, easily formed brass provides superior surface properties which help cut finishing costs to the bone.

In Eppinger's case, for instance, some of the lures are clear polished and lacquered. Others are hand-painted. Ordinarily, these two different operations would call for two different types of metal. But, by using Bridgeport Ultra Fine Grain Brass, the same material can be used for either finish, an important purchasing saving.

If you're fishing for ideas on how to reduce your strip metal finishing costs, cast a line in Bridgeport's direction. Call your nearby Bridgeport Sales Office . . . or write direct for a copy of our Ultra Fine Grain Brass booklet, GRAIN SIZE, THE FOURTH DIMENSION. Dept. 3408.

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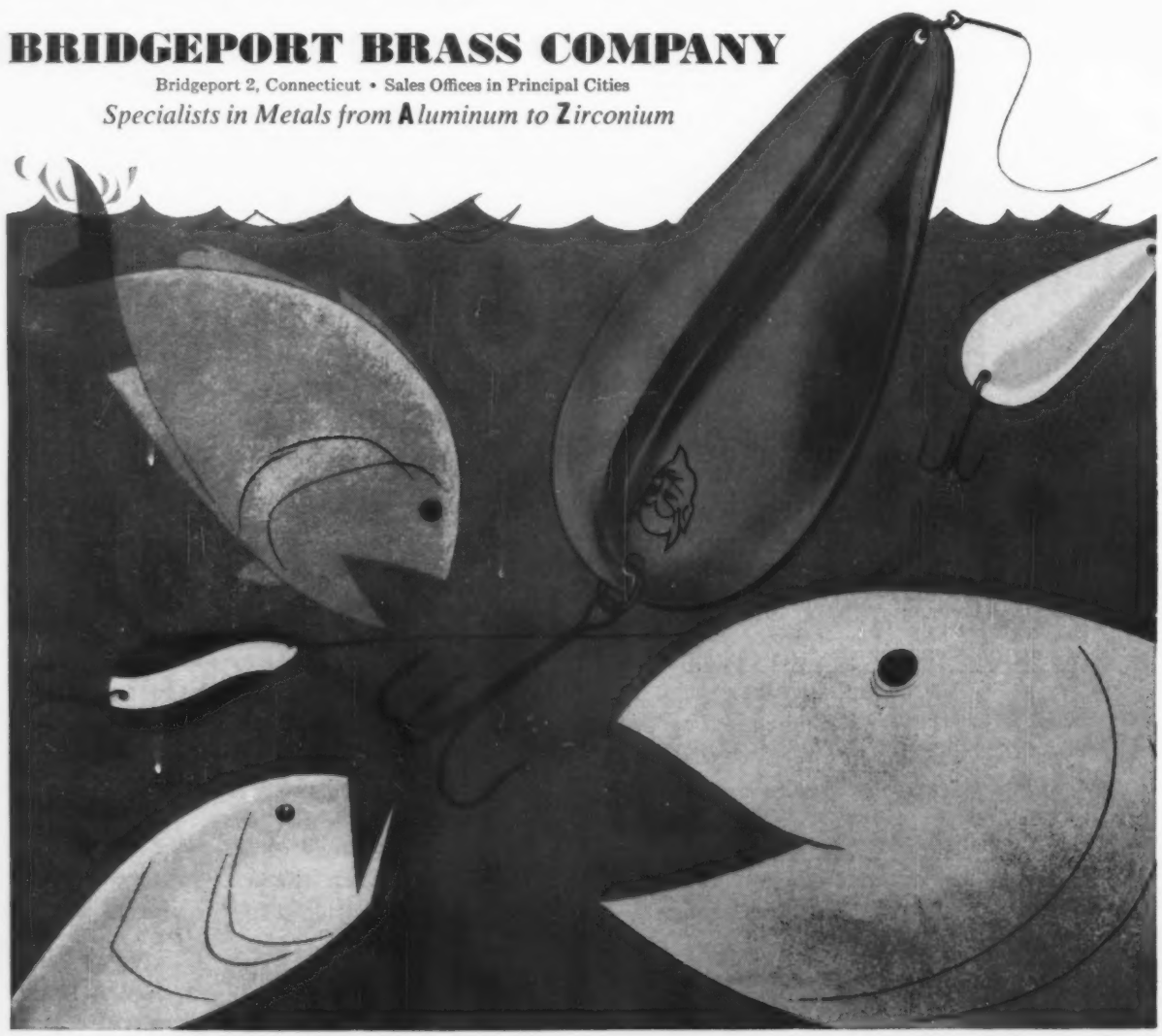


TESTING: Reactor at GE's Vallecitos Atomic Labs checks properties of steel for possible nuclear use.

Atomic Power Lures Industry Into Taking a Closer Look

It won't payoff for years, but steel mills are spending heavily to investigate nuclear power.

Progress is good, but they still have more questions than answers.—By G. J. McManus.

▪ Although commercial atomic power promises more problems than profits in the next 10 years, steel mills are moving deeper into the field.

U. S. Steel Corp. has added two nuclear physicists, two nuclear metallurgists, and a reactor chemical engineer to its applied research staff. And the Corporation is sponsoring a broad program of radiation testing at Vallecito's Atomic Laboratory of General Electric.

Jones & Laughlin recently brought out a series of low manganese steels, specially designed for nuclear applications.

Studies jointly underwritten by steel companies are inquiring into the use of steel in reactors, and the use of radioactive material in steel processes.

Cautious Approach — The mills are not exactly plunging into nuclear work. The immediate commercial payoff does not justify all-out research and development. On the other hand, steelmakers can't ignore the ultimate commercial potential of atomic power. And they can't sit still while big metallurgical questions in nuclear fields go unanswered.

There are 88 megawatts (mw) of nuclear generating capacity in this country. Most of this is at the Shippingport (Pa.) Atomic Power Station, built by Westinghouse for Duquesne Light Co. Shippingport has a rating of 60 mw, was built for ultimate production of 100 mw.

Just Ahead—By the end of 1960, there will be between 500 and 600 mw of nuclear power capacity. The GE-built Dresden station at Chicago is due to add 180 mw. The nuclear portion of Consolidated Edison's New York State plant will add 150 mw. Westinghouse is building a second pressurized water

An atomic power plant can be built for operation in 1965, competitive with more expensive conventional power.

reactor to have a capacity of 110 mw. The Enrico Fermi and Elk River projects round out the batch of major atomic plants due for completion in the next 18 months.

How much metal will the program require?

Based on the limited information available, one study projects 1900 mw of nuclear power by 1965, and an annual addition of about 700 mw at that time. The Shippingport reactor, with 100 mw capacity, took about 10,000 tons of raw steel, excluding generating equipment.

Not a Good Guide—Shippingport figures cannot be taken as standard in figuring future metal needs. New reactors will differ radically from the initial plant. And there is a good chance that any revision of steel consumption will be downward. As a pioneer project, Shippingport was designed with extreme safety allowances. One engineer estimates it could be built now with 25 pct less steel.

As it stands, atomic power does not shape up as a tonnage market for steel for at least five, probably 10 years. However, just a small drop in nuclear costs could advance this schedule in a hurry.

Westinghouse Says '65—Westinghouse estimates an atomic plant can be built for operation in 1965 and compete with the more expensive conventional power.

Nuclear fuel is probably the biggest cost problem for reactors. Close behind this comes metals. The Shippingport reactor has as its basic element a pressure vessel 31 ft high and 9 ft diam. The vessel is made of A302B steel plates and forgings. Plates are 8 in. thick clad on the inside with ¼ in. stainless.

Stainless Interior — Stainless is used extensively throughout the whole interior of the reactor system. About 135 tons of stainless piping went into the plant. Stainless forgings are used as outer members of the core and control rod assembly. Zirconium and some hafnium are the main metals within the core.

High Cost of Failure—Preventing unexpected metal failure is even more important as a cost factor than as a safety hazard. Lacking certain knowledge about metal behavior, reactor designers have gone to heavy backup devices. At Shippingport, 2200 tons of steel are used to form a containment shield, 1 in. thick, around all critical parts of the reactor.

It is this type problem that has drawn U. S. Steel, for one, into nuclear work. Six years ago, USS began training and recruiting men for nuclear study. Ties were established with AEC laboratories. Men were sent to study with AEC, and at universities.

Study for Tomorrow — Today, U. S. Steel has men working or studying full time at Westinghouse and at General Electric Laboratories; at Brookhaven, N. Y., Labs; at Atomics International; and at the University of Illinois. Also, a wide range of research skills are being applied to nuclear problems in the USS Monroeville, Pa., center.

George E. Pellissier, manager, special projects at Monroeville, explains why there is a shortage of nuclear knowledge in the metals field:

"This isn't easy information to come by," he says. "Until recently the only reactors available for testing were in the hands of AEC and they were kept busy on fuel and other such studies."

This situation was relieved recently by the startup of General Electric's test reactor at Vallecitos, and the Westinghouse reactor near Pittsburgh. Both are available to private companies.

Test Program—This fall, U. S. Steel will send samples of carbon, and high strength alloy steel to Vallecitos. The program is the broadest of its kind ever undertaken by a steel company, and probably the first really systematic study of nuclear steels anywhere.

It will be next spring before the tests are completed. Another year will be needed for evaluation. It will probably be two years before data is available to begin development work.

Mr. Pellissier feels both the time and the cost are justified.

Radiation—One of the big problems has been the effect of radiation on steel. When carbon steels of the vessel type are subjected to neutron bombardment, their strength increases but they lose toughness.

Closely related is the effect of radiation on high strength alloys. For some of the reactors being discussed, carbon steel vessels might have to be 16 in. thick to meet pressure requirements. There is a question as to how thick a vessel can be.

Time and Work—These are not insurmountable problems, even with existing steels. The ideas of layer construction is being considered. But the difficulty would be simplified if high strength alloys could be used and the thickness of vessels reduced. The trouble is that the few alloys tested thus far have been susceptible to radiation damage.

In addition, nuclear work has raised basic questions of compelling interest. U. S. Steel examined samples of nuclear steel in an electron microscope. The prints showed what appeared to be a drastic change in the microstructure of the steel. There seemed to be a decrease in the ferrite grain size, a decrease in the particle size of the carbide, and a redistribution of the carbides.

Will AEC Use Surplus Aluminum?

House and Senate differ on surplus aluminum policy.

But if AEC buys from the stockpile, it's sure to cause a big row.—By F. J. Starin.

▪ They're bumping heads in Washington over what to do or not to do with surplus, government-owned aluminum.

It's not the first time. But this time, unless someone comes up with the "right" answer, the battle lines will extend right through the aluminum industry.

The battleground is the Atomic Energy Commission. It's an important one because it will use about 16,303,000 lb of aluminum in fiscal 1960.

The Record—Here's what has happened. The House Appropriations Committee decided this would be a good place to use up some of the surplus aluminum in the Defense Production Act inventory. (It's estimated DPA has six times more than defense requirements.) So in granting AEC $738 million to buy raw materials AEC was directed to buy aluminum from the government.

The Senate Committee agreed in principle that the surplus U. S. metal should be moved. But it opposed any "piecemeal" attempts such as this.

The Differences—The two met in joint session, and neither would budge. The result: AEC gets its money along with instructions: (1) Buy aluminum from DPA, and (2) Don't buy aluminum from DPA.

AEC general manager A. R. Luedecke notes that only about 650,000 lb, or about four pct of its total aluminum requirements are for pig or ingot—the form of the DPA metal. The obvious answer is toll—buy aluminum from DPA and pay commercial companies to alloy and work it.

Past Experience—There was a try at this recently when Pentagon ordered Food Machinery and Chemical Corp., to take DPA aluminum and toll it for the aluminum tracked vehicle it had been contracted to build for the U. S. Army. Before FM&C could comply however, the order was rescinded.

What happened is not clear. Washington sources suggest the original idea came from the General Accounting Office. And the protest that changed Defense Dept.'s mind came from industry.

What Now? — There has been much speculation recently on what would happen if Defense were to write such a contract now. It is generally agreed that any attempt to toll government metal would kick up a row.

However, under the law which permitted the government to build up the DPA inventory, the metal is acquired "for government use or resale." It, (Public Law 774, 1950) and other orders, admonish and direct caution, but the Office of Civil and Defense Mobilization has the final say, and most observers seem to think it would go along, if the contracting agency could hold off its critics.

The Senate-sponsored clause directing AEC not to buy DPA aluminum reveals the Administration is currently wrestling with the problem. The Senate Committee "expects the Executive branch to submit legislation to accomplish these purposes (liquidate surplus metal stocks) to Congress as soon as practicable."

Aluminum and stockpile specialists in various areas of the government acknowledge there has been high level probing in their fields. But it doesn't appear that anything of the calibre it would take to settle this squabble will be forthcoming very soon.

How It Looks From Opposite Wings

From the House

"The House managers (joint conferees) direct that procedure be implemented as rapidly as possible for drawing the aluminum requirements of the Atomic Energy Commission from the Defense Production Act inventory."

From the Senate

"The Committee feels that the Atomic Energy Commission should take no action relative to the utilization of government-owned aluminum until Congress has had an opportunity to consider this legislation."

Steel Stalemate Nears the Crisis

Although there has been little progress, the time is coming when something has to give. It may be at Ike's insistance.

Meanwhile, blasts and counter-blasts contribute to continued ill feeling. — By Tom Campbell.

1959's Union-Management Crisis

▪ The current steel labor stalemate vies in intensity with the Geneva conference roadblocks. This week it looks as if Mr. Eisenhower—who is deeply involved in the Berlin crisis—may soon inject himself deeper into the steel labor hassle too.

Steel labor and management are again negotiating under the auspices of the Federal Mediation Service in order not to be "tagged out" by the public or the government.

Led to Water—Joe Finnegan, ace government mediator, has led the union and steel company negotiators to water but getting either to drink may be another matter. Positions are being restated by both sides—with no give; as yet.

The battle of the press releases hit a high—or low—mark last week. These blasts raised the eyebrows of some of the more cynical —or weary—reporters.

Give and Take—A mildly acquiescent statement by the union that it was all for Labor Secretary Mitchell's attempt to "help" set off a blast from the steel firms that literally singed the silver hair of Steelworker chief, Dave McDonald. So much so that a delayed action paper bomb came from him the next day.

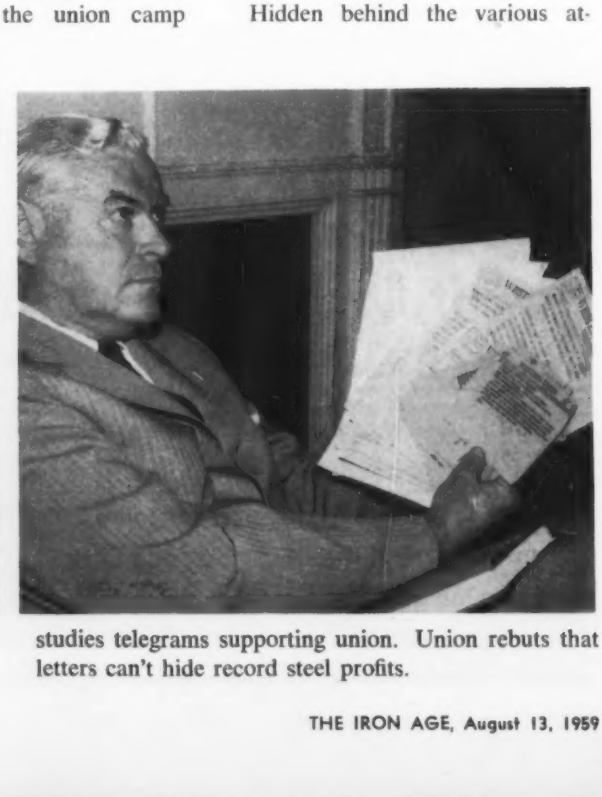
The steel side's telling blow accused Mr. McDonald of wanting—and still wanting — a strike. It further admonished Mr. McDonald to stop looking to government for a settlement.

New Tactics for Steel—The "retaliation" from the union camp brought forth some of the most colorful (?) language yet to be released by Mr. McDonald. Highlight was the accusation that Mr. Roger Blough was attempting to "blackmail" the government by suggesting that outside agencies refrain from forcing an "involuntary" settlement.

It is hard to see how there can be much collective bargaining in such an atmosphere. But old-timers covering steel recall that the only difference in this hassle is that the steel firms have gotten "into the spirit of the thing" by trading slug for slug in this slug-fest.

Second Guessing — This paper battle for the public's mind gives some public relations people in some of the 12 steel firms second thoughts after each round. Some Washington friends of the steel firms who are used to seeing union barbs being launched into the hides of management have a mixed reaction to some of the industry statements. But these people are among those who, in the past, chastized steel for "not answering."

Hidden behind the various at-



REACTION: Reporters check some 6000 letters in support of steel company stand while Dave McDonald studies telegrams supporting union. Union rebuts that letters can't hide record steel profits.

tempts of government and Congressional figures to "settle" the strike is the cold hard fact that no agreement is in sight. Last week both sides were farther apart than they were when the battle started. That is usually the case when a national labor dispute comes so close to settlement, as this did a month ago.

The Real Issues—Overshadowed by the sledge hammer impact of the steel industry statements is the core of the settlement roadblock. The steel firms demand a change of attitude in Mr. McDonald. No economic issues were reached at all last week. The steel side was still housed in the local practices area and had no intention of moving out. The union which called the steel strike was having none of that. It was holding out now for something to make the strike plausible.

While some of the 12 steel firms were becoming unhappy at the future aspects of the steel strike—as well as the future industrial relations problems, there was no sign at all of any "defection" from the 12-company steel front.

Local Problems—Industrial relations people are privately worried about what form the final settlement will take eventually. If clarification of the local practices clause is made in the international agreement (master agreement for all firms) some steel people are wondering how the locals will react. But the disputants in New York were last week still far from even talking about final language.

It has been generally believed that the 12-company setup was a creature of the steel industry. This may be only a small part of the whole truth. Dave McDonald had a lot to do with spawning some time ago the 12-company unit idea in order to get a contract quicker and easier—so he thought. Now that the steel side is holding out for downward as well as upward bargaining, the 12-company block is a formidable obstacle to any "easy" steel labor contract.

New Gas Construction

Spending Rise of 25 Pct Predicted

▪ The nation's gas utilities and pipeline companies will spend a record $1859 million for construction this year.

Looking ahead, expenditures will climb gradually to a level of $2166 million in 1962, the American Gas Association estimates.

Accent on Transmission — Construction during the 1959 - 62 period is expected to cost $7.9 billion. This is a 25.7 pct increase over the $6.3 billion spent in the previous four-year period.

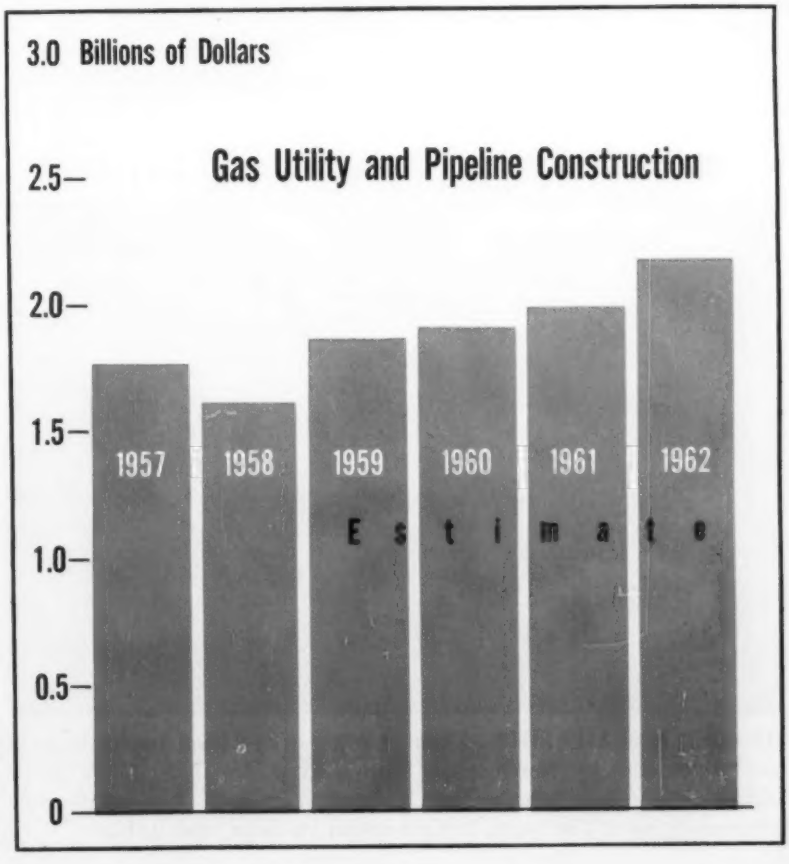
Transmission construction accounts for the largest share of the gas utilities and pipeline expenditures. For example, in 1959 spending for transmission construction is expected to be $809 million, distribution construction $648 million, and production and storage construction $325 million.

Pipe Needs Predicted—Forecasts indicate that underground storage spending alone will total $468 million in the four-year period.

Expenditures for steel pipe are expected to bulge about 25 pct in 1960, from 1,983,000 tons in 1959 to 2,589,000, then taper off.

Use of copper, however, is expected to climb steadily from 1471 tons this year to 3222 tons in 1962.

Gas Pipeline Network Spreads



Blast Furnace Blower Powered by Turbine

U. S. Steel has selected a gas turbine to drive blast furnace blower at its South Chicago Works.

Unit, built by Westinghouse, is now completing its final tests.

▪ A Westinghouse gas turbine—first of its kind used to drive a blast furnace blower—will soon be installed at the South Chicago Works of U. S. Steel Corp.

The unit, which derives its energy from blast furnace gases, is completing final testing at Westinghouse's Industrial Gas Turbine Dept. at Lester, Pa. It is capable of supplying 125,000 cu ft of air per minute at a pressure of 35 psig.

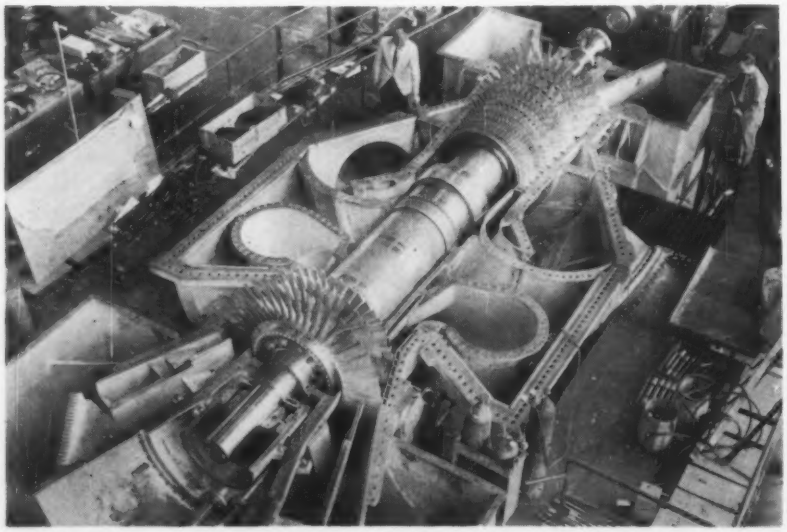
Fruits of Research — The blast furnace blowing gas turbine is the result of seven years of research, Westinghouse points out. Study was aimed at finding the advantages of using a turbine over existing methods of processing blast furnace gases for blowing and power.

Turbine's advantages, Westinghouse states, are lower initial cost, less operating and maintenance expense. In addition, the gas-turbine blower requires less space and can be made to use no water.

Boiler Eliminated—With the gas turbine system the need for a boiler as auxiliary equipment is eliminated. The blast furnace gas is burned directly in the turbine.

The system's connected axial compressor not only supplies air to the blast furnace, but also furnishes air to the combustion system of the gas turbine.

Two delegations of top U. S. Steel personnel have visited the Westinghouse turbine facilities at Lester to watch final tests on the turbine. During shop testing the unit bettered its designed capability by providing 135,000 cu ft of air per minute.



HEADED FOR THE MILL—Overhead view of new blast furnace blowing gas turbine built by Westinghouse Electric Corp. for U. S. Steel's South Chicago Works. At bottom, right, is multi-stage axial flow compressor, followed by extraction ports, hot gas return envelope, and turbine.

Mueller Confirmed

Frederick H. Mueller, former furniture manufacturer, won quick Senate confirmation as head of the Commerce Dept., ending a long and bitter controversy over the job. The fight was touched off when President Eisenhower named Lewis L. Strauss, former chairman of the Atomic Energy Commission, for the job. The Senate rejected him.

SUB Earnings Tax

Congress is looking into proposals to permit employers to earn more tax-free income on the funds they set aside to pay unemployment benefits.

At present, not more than 15 pct of such earnings may be exempted from federal income taxes. Legislation pending in the House provides no federal income tax would be collected on any earnings from these supplemental unemployment benefit (SUB) trusts.

Supplemental pay benefits are contributed almost entirely by employers.

SUB Earnings—Many employers have been able to put their SUB funds to work for them. Earnings have been better than had been anticipated, due to two factors:

Unemployment has been running below expectations, so only minimum jobless sums have been paid out;

Many firms have made tidy profits on stocks and other investments purchased with SUB funds.

More Strikes in '59

The U. S. Dept. of Labor reports the number of strikes beginning in the first six months of the year was up significantly over the same period last year, but lower than the level in most postwar years.

Labor statisticians figure 1875 strikes began in the first half, idling 775,000 workers, resulting in about 12.5 million man-days of idleness.

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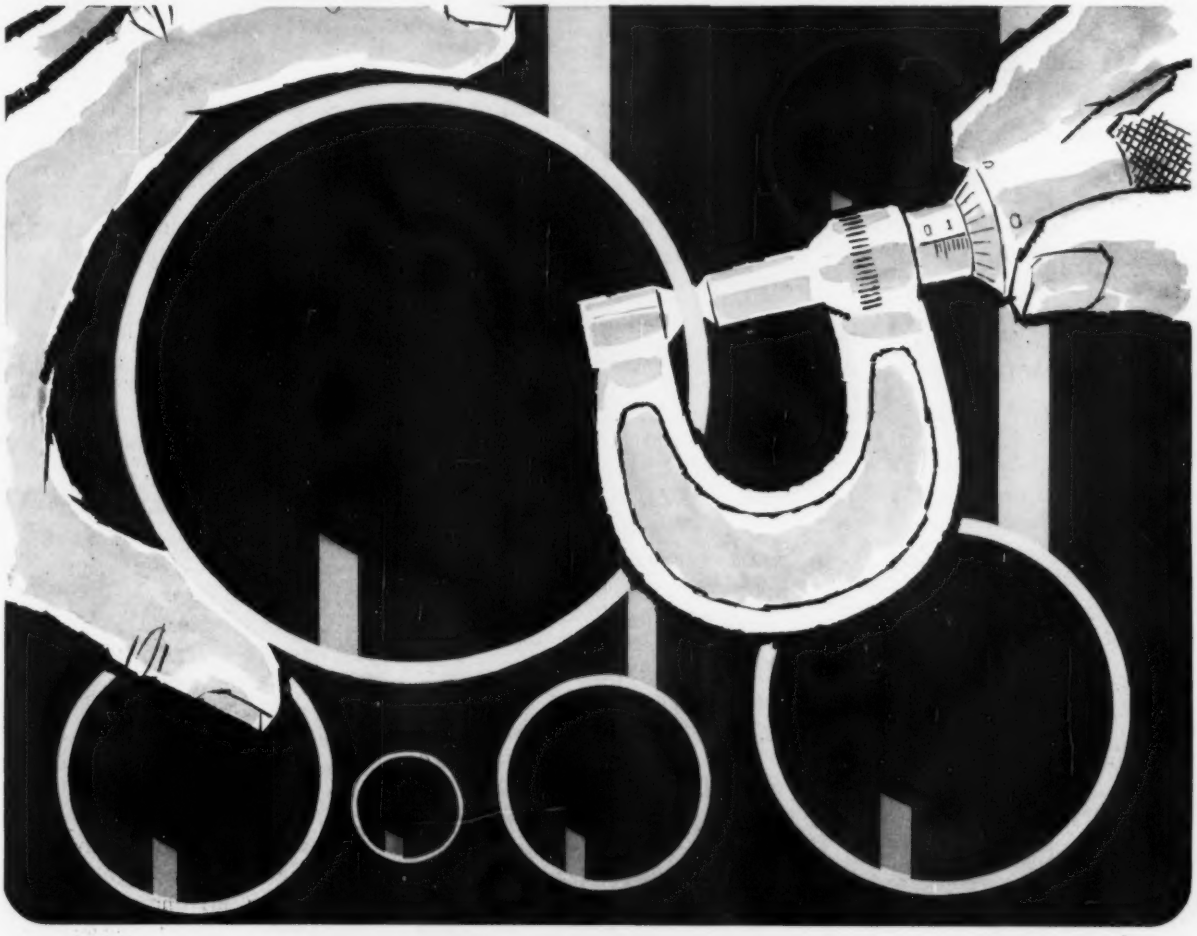

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Allegheny Stainless Tubing ranges from 3/16" OD to 3½" OD with wall thickness from .013" to .375". Typical of the specials A-L can make are 2½" OD—.032" wall thickness, 3" OD—.042" wall thickness and 3½" OD—.058" wall thickness. All sizes with true circularity, no dents or handling marks.

Stainless seamless tubing is made in all stainless grades including 309, 317, 318, 310, 416 and 446—normally difficult to obtain. For special high-temperature applications, A-L produces tubing in high-strength alloys such as A-286, and in vacuum melted steels and alloys. Also in custom analyses such as low cobalt (.01-.05) grades and with boron additions to standard grades.

A-L also makes composite tubes with bonded combinations of carbon and stainless steels and other metals for unusual corrosion applications in process equipment.

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John Logan

Man Behind Induction Heating

Eleven years ago, low-frequency induction heating was little more than a theory.

John Logan saw its potential and led the way in market development.

▪ The casualty rate on new business has always been high. But the odds against success were rarely higher than when John Logan went into the low-frequency induction heater business in 1948 at Youngstown, O.

Yet with a shoestring and a good idea, his Magnethermic Corp. became the pioneer in its field. This year it climaxed the record by buying the older Ajax Engineering Co. and Ajax Electrothermic Corp. to become the first in the field with a complete line. And John Logan became president of the new firm.

Many Doubters — The odds against Logan and Magnethermic in 1948 were awesome. Low frequency induction heating of aluminum billets before extrusion was not being done even in Europe, where electricity costs less than gas. In this country, extruders were using conventional low-cost gas furnaces to heat the small diameter billets being used.

Extruders had their doubts about the 60-cycle heater. The major electrical firm Mr. Logan represented as salesman would not go into the business although already in allied electronic heat treating. So, Mr. Logan scraped up what limited resources he could and set up shop for himself.

Getting Started—A Youngstown firm was the first to give his low-frequency induction idea a try. It ordered a 50 kw heater to handle 3 by 11-in. billets. The coils required rectangular copper, which was very scarce.

So Mr. Logan and his associates —some of whom worked elsewhere during the day—made their own die, pointed a piece of round copper tubing, inserted it in the die, and attached the cable to the rear end of a truck. By driving the truck out of the shop and across the street, they got a piece of rectangular copper long enough for their purpose.

Spreading Out — The company has come a long way since then. Today there are more than 250 Magnethermic billet heaters installed with extrusion presses all over the world.

The company has gone into copper, brass, and extrusion steel. It is extending its line into high-frequency induction melting, heat treating, and shrink fitting heaters. A licensing agreement has been in effect with Loewy Engineering of England since 1951. New Canadian and German subsidiaries have recently been formed.

His Background—Making a record like this leaves little time for other diversions. Mr. Logan's are limited to church activities, golf, flying, and family interests—a wife and two daughters.

He started his career with a degree in electrical engineering from Washington University in St. Louis. In World War II, he saw service with the U. S. Navy aboard a minesweeper.

JOHN LOGAN: He overcame odds to prove a new heating method.

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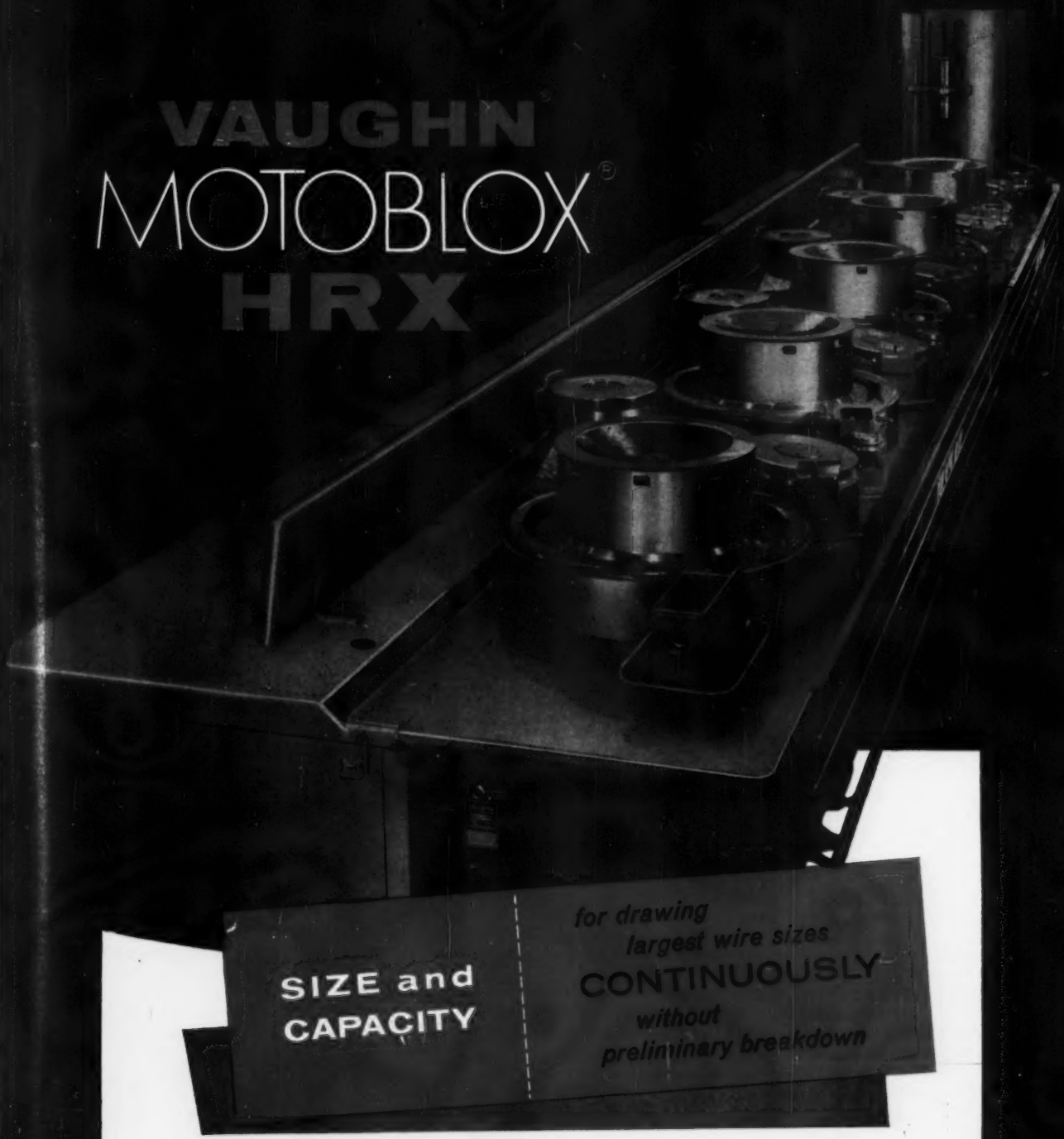

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TIMKEN® *Fine Alloy* STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING

Look for Big Fourth Quarter

Even without the steel strike a third quarter downtrend was expected. A strike of some length, however, could result in new business records in the fourth.

Right now, the short-term factors will be in control of your business rate.

▪ From now into 1960, the short term factors are taking over in determining business levels.

If there had been any doubt of that, the steel strike took care of it. Most of the elements that will determine your business for the rest of this year will be the result of strike effects, inventory policies, tight money, or the impact of the new cars—things like that.

The long-term forces remain unchanged, with a gradual buildup into the early 60's and possibly a boom of unheard-of proportions later.

Down, Then Up—But these short term factors are volatile and can cause some sharp ups and downs. Unfortunately, the "downs" seem to predominate at the moment.

When the year is charted, it will show a significant decline in the third quarter, followed by a sharp uptrend in the fourth. The severity of these inclines will be determined by the length of the steel strike. But the pattern was in the making beforehand.

New Records?—Should the steel strike extend for, say, six weeks or more, the third quarter drop will be very severe. But it could well be followed by a period of recovery that could bring industrial production and gross national product rates over the record second quarter rates.

In fact, the FRB index of industrial production, the old fashioned one, not revised, could well hit 160 in November, compared with the record 155 in June.

Strike Effects—Some of the effects of the steel strike are already taking effect, although they tend to be local for the time. Freight car loadings are about 27 pct below the rate of a comparable time in 1957, reflecting general drying up of shipments to and from the mills more than any other factor.

But soon it will spread to areas only indirectly affected by steel operations.

Adjustment Inevitable—The latent effects of a strike of long duration are always a subject of debate. Lost wages, lost earnings, lost taxes, are generally considered to be unretrievable. Nevertheless, business always snaps back with a reflex action and that can be looked for this fall.

June Was a Hot Month

▪ It was good while it lasted. Government reports on pre-strike business rates, now just coming through, have a hollow ring in view of the strike uncertainty.

But they also reflect the strong state of business as the third quarter got under way. June indicators stayed right at the top of the scale.

For example, manufacturers' shipments and new orders continued to gain through June, with both categories moving ahead about 2 pct from May to June.

Inventory Buildup — With sales moving slightly ahead of new orders, backlogs had a mild decline, from $50.1 billion to $49.9 billion. At the same time, manufacturers' inventories advanced more rapidly, from $51.6 billion to $52.1 billion (seasonally adjusted). Most of these gains were in the durable goods industries.

Before the strike, 14 major areas were removed from the Dept. of Labor's substantial labor surplus category. This reduces the number in this group to 46, compared with 89 in July of 1958.

Earnings Up—During June, the number of nonfarm jobs increased by more than 500,000, putting the nonfarm employment back at a pre-recession level of 52.5 million. This is 2.1 million better than a year ago.

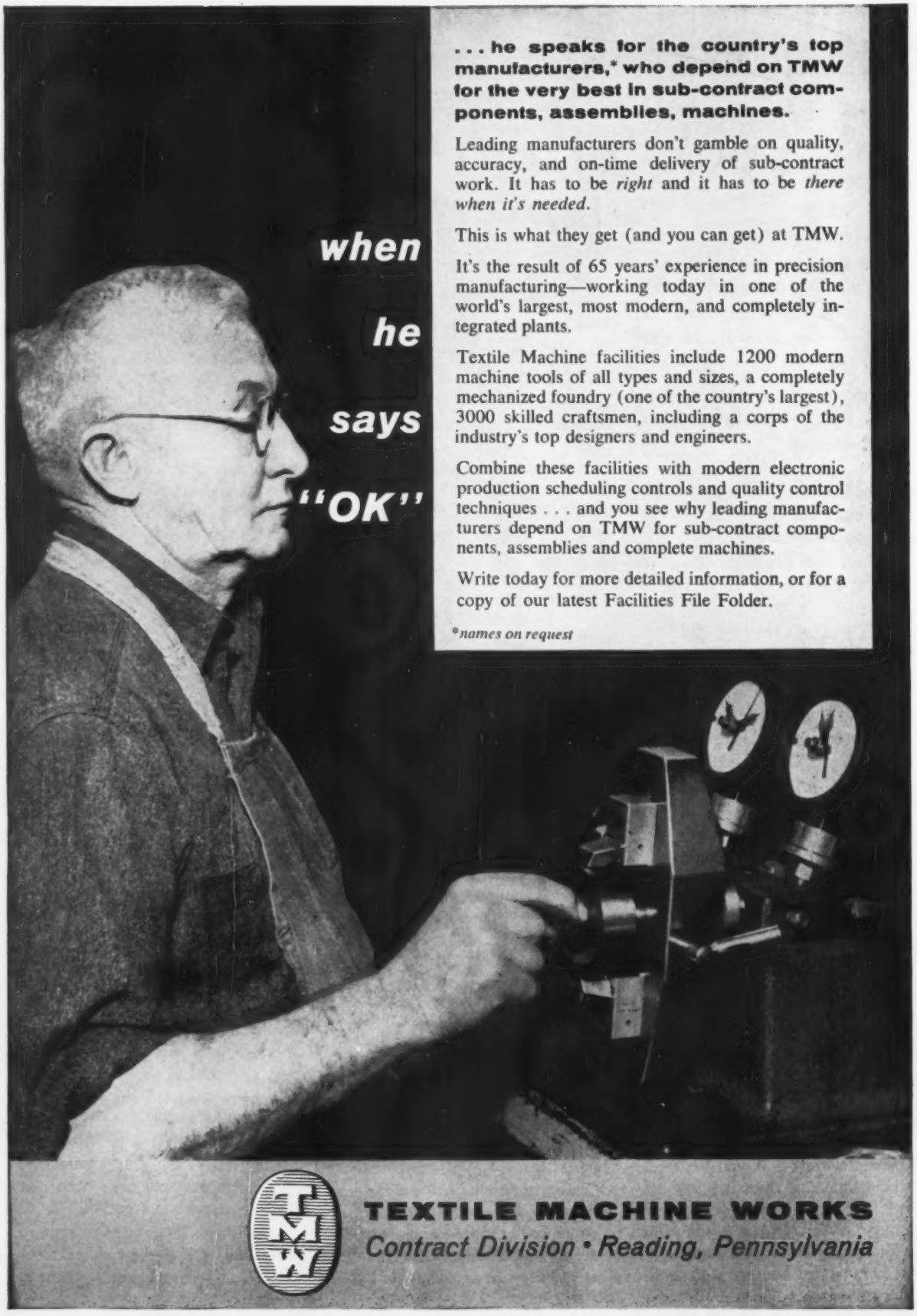
At the same time, the factory workweek gained 0.1 hours to 40.6 and weekly earnings rose 22¢ to an alltime record of $90.54 in June.

Strike Costs Export Potential

With the steel industry closed down tightly, and a post-strike shortage looming, some good export potential is slipping by.

Reports from Britain indicate the auto industry there is in a real bind and may have a steel shortage for the rest of the year. Ordinarily, this shortage would have been met by imports, some from the U. S.

But today, U. S. steel users are competing for foreign steel themselves for available export tonnage on the European market.



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TEXTILE MACHINE WORKS

Contract Division • Reading, Pennsylvania

How to Handle Different Kinds Of Problem Employees

By **Robert N. McMurry,** President, The McMurry Company, Chicago

Most problem employees are not hopeless cases.

With the right kind of supervision they can become worthwhile, productive workers.

Here are the approaches to dealing with different behavior problems.

▪ What can be done about the problem employee, to minimize the costly and detrimental effects he can have on business operations?

Because the results of problem behavior do not show directly up on the balance sheets, these hidden costs are not readily recognized. But they mount up to the extent that they can threaten the life of the business itself.

Problem employees can be separated into three general categories.

First, and less serious, are the chronically tardy and absent, the accident prone, the lazy, the inept, and those who have a tendency to gossip excessively.

More serious are those whose problem behavior is deeply imbedded in the personality and are difficult to recognize. Among these are the hypochondriac, the alcoholic, and the insubordinate.

Third, and most costly, is the group that includes the brilliant malcontent, the senile executive and the psychopathic personality.

Why This Happens—Almost all problem employees have acquired

EASY TO HANDLE: Lazy, disinterested employees are minor problems, can usually be brought around by firmer discipline.

The Problem Employee
Part 2 of a Series

NEXT WEEK: Dangerous Cases

Some problem employees can be disastrous to the success of a company. Next week Dr. McMurry takes up these cases, points out why they are often difficult for management to detect and handle.

The first article in this series, "Why Management Has Difficulty Handling Problem Employees" appeared in last week's issue.

this status for one of two reasons:

1. The individual has been misplaced; he is on the wrong job or is subjected to pressures in excess of his tolerance for them. He may be over or underqualified or his assignment may be temperamentally imcompatible.

2. He is mildly or seriously ill or deteriorated mentally. He may have begun to lose touch with reality to some degree.

The mildly serious cases are ordinarily not too difficult to cope with if management will take the time and trouble, openmindedly, to analyze all the circumstances.

Look Into Causes—Normally, a little study conducted by a reasonably sophisticated personnel specialist will reveal the roots of the difficulty. Corrective action usually consists in the reconstitution of the job to insure that it suits the man's needs and capabilities. It is usually futile to attempt to change the employee to adapt himself to a position where he has become a problem; the job must be altered to fit **his** qualifications.

Relatively few of the more serious problem cases fall into this category. Most well-adjusted persons are able to adapt themselves to whatever conditions they encounter. If they cannot, they usually have the courage to quit.

The problem cases included in the category characterized by the tardy, lazy, the gossip, the insubordinate, etc. (except those who are incompetent or misplaced) are problems only because they have not been subjected to sufficiently strict discipline.

Take Action — Any employee who persists in such behavior does so for only one reason: His supervisor is too weak to take the necessary corrective action. The handling of such cases should not be difficult. It requires only three basic steps:

1. The precise definition of the employee's duties, responsibilities, authority and place in the departmental hierarchy.

2. A statement by the supervisor of his expectations. This means the supervisor defines exactly what he regards to be satisfactory performance in terms of such factors as attendance, quantity and quality of production, costs, deadlines and the like.

Agree On Standards—These performance standards are first reviewed with the employee and he demonstrates not only that he understands them, but also that he regards them as reasonable and attainable.

3. A follow-up at appropriate intervals by the supervisor to ascertain the extent to which his defined expectations are being met. If they are being surpassed, he compliments the employee. If they are not being attained, he and the employee analyze the situation to find out why.

If necessary, the supervisor provides help. If the employee is insubordinate, recalcitrant or resistive, the supervisor warns him. If repeated warnings are ineffective, it is usually better to separate him.

Appeasement Won't Work—Attempts to win employee good will by appeasement are almost invariably fruitless. Such men are incapable of submitting to the discipline of a business organization and do not belong in one.

Members of the second category of problem employees, the hypochondriacs, those with chronic financial and domestic problems, the alcoholics, the oversuspicious with delusions of persecution, are all to some degree mental cases.

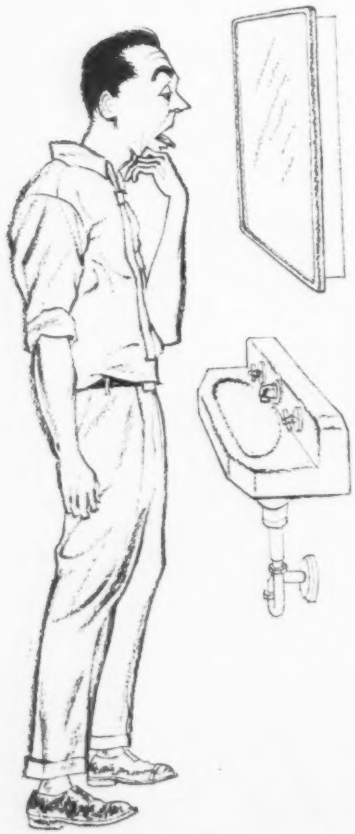
Their difficulties are not in the realm of the technical. Their trouble lies in the fact that they have begun to lose or have already lost contact with reality.

Tensions Build Up — Their primitive infantile needs have become so pressing and they have begun to create such uncomfortable needs or tensions that the sufferer permits them expression in spite of the fact that he knows what he does will get him into trouble.

Typical is the alcoholic and his drinking. Other examples are the inadequate person who becomes hungry for power and authority or becomes a pretentious showoff, often living beyond his means as well. The hypochondriac takes flight from his real or imagined problems in ill health.

The over-suspicious are outstanding haters. They hate nearly everyone. However, to rationalize or justify their hatred, they project their hostilities into those they hate. Often with exquisite logic and finesse, they find "proof" that these others are antagonistic or are plotting against them. This, then, justifies not only the open expression of their hostilities toward them, but provides them with an excuse for retaliatory attacks as well.

Suggest Treatment—The important thing the executive must remember about this class of problem employees is that no matter how



REALLY SICK? The hypochondriac takes flight from his real or imagined problems in ill health.

GOOD SHOWING: If follow-up check shows employee is surpassing performance standards supervisor should compliment him.

badly out of touch they may be with reality, they are absolutely proof against logic.

In view of this, the first rule to follow in dealing with such cases is to cease to regard them as reasonable, rational persons, because they are not.

Ideally, these maladjusted employees should be encouraged to enter psychiatric treatment. Unfortunately, the majority will resist vigorously. They have no insight into the extent of their neuroses and have no real desire to be changed.

Review Placement—However, a second step can be taken, assuming they have otherwise valuable contributions to make: This is to review their present placement.

1. Are they misplaced so that the incompatibility of their jobs is aggravating their condition?

2. Is there any symptom of their maladjustment which could be exploited advantageously? For example, the pretentious individual might be useful as a front man entertaining customers and officials.

3. Where can they be placed where their disruptive influence will be minimized? It may be necessary to create a special assignment. In other cases, early retirement may be possible.

The next question: How are they best handled, regardless of placement?

As has been pointed out, it is a waste of time to advise, admonish or even discuss their shortcomings with many of these employees. They will not only be unreceptive, they may be openly resentful.

Take Firm Stand—Attempts to please them by giving in to their demands are useless because their demands are limitless and they have no gratitude. As with the problem cases in the first category, they will recognize and respond only to firmness and structure and taut discipline by their supervisors.

They will not like it, but neither will they like any other kind of treatment. Hence, it is necessary to:

1. Define their jobs.

2. Define the supervisor's expectations.

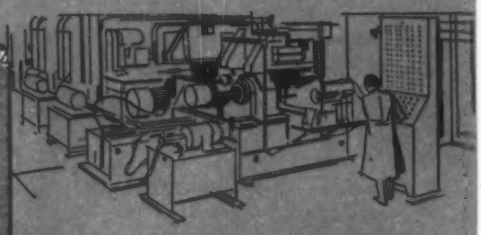
3. Follow them up, fairly but firmly. Because many of them are intelligent, their explanations and excuses will be both impressive and plausible. Nevertheless, most of these will be found on investigation to be no more nor less than ingenious and plausible rationalizations.

Such persons must be told directly and frankly what they are to do. Although they are chronologically adult, they are still wilfull children emotionally and must be handled accordingly. They invariably require strong supervision.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

AUTOMATION BEGINS HERE

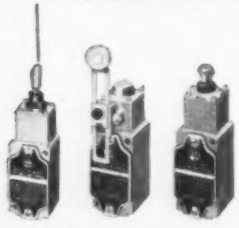
... Insist on Allen-Bradley accessories for continuous automatic production



In this broad line of Allen-Bradley accessories, each and every unit carries the traditional A-B trademark of *quality* that stands for trouble free operation. Rugged construction, and maintenance free, silver alloy contacts provide the reliability that is essential to the continuous operation of *your* automatic production machines.

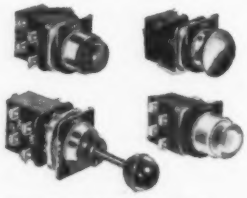
Profit from the experience of the leading machine tool builders . . . insist on Allen-Bradley *quality* motor control *all the way!*

Special push button panels can be assembled to your specifications.

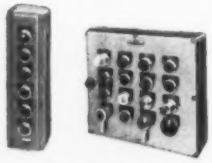


OILTIGHT LIMIT SWITCH
Bulletin 802T with sealed heads and bodies. Various operators.

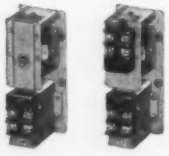
PRECISION LIMIT SWITCH
Bulletin 802 oiltight. Responds to very small operator travel.



OILTIGHT CONTROL UNITS
Bulletin 800T. Choice of push buttons, lights, and switches.



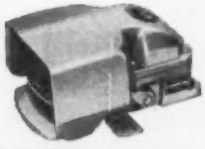
OILTIGHT CONTROL STATIONS
Bulletin 800T for up to 16 units in die cast aluminum enclosure.



PNEUMATIC TIMERS
Bulletin 849. Reliable and accurate. For on-delay or off-delay.

OILTIGHT PRESSURE CONTROL
Bulletin 836. For hydraulic systems with pressures to 5000 psi.

STANDARD DUTY PUSH BUTTONS
Bulletin 800. Up to three units, also pilot lights and switches.



FOOT SWITCH
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Who Are the Safest Drivers?

Mile-for-Mile It's Truck Drivers, Says AMA

It wasn't always thus; survey shows trucks are three times safer than a decade ago.

Operator safety programs and better truck design are given the credit.—By H. R. Neal.

▪ Truck drivers have often been maligned by motorists for their ability and attitude on the highway. Apparently, these aspersions are miscast.

There is evidence that drivers for truck fleets, at least, are about twice as safe as the average motorist. It hasn't always been this way. The truckers have made substantial improvements in their driving records over the past 10 years.

Three Times Better—The Automobile Manufacturers Association says in its quarterly "Automotive Safety," truck fleets in the U. S. are now three times safer than they were 10 years ago.

The latest survey, covering 1958, shows major commercial and government fleets averaged only 14 accidents per million miles of travel. In 1948 the rate was 45 accidents per million miles. Fleet truckers today average some 71,000 miles without accidents, compared with about 22,000 miles between accidents a decade ago.

Accident Rate—The accident involvement rate for all vehicles last year was 26.5 per million miles of travel—about one accident every 37,700 miles. While the figure for passenger cars alone isn't available, it is obvious that it is higher than the average.

AMA credits the trucking industry's substantially improved safety record to both operators and truck manufacturers.

Operators have contributed through "sound driver selection, and training programs, good maintenance practices and close adherance to safety regulations of the states and the Federal Interstate Commerce Commission."

Truck manufacturers and their

Some of the Best in Worst Roads

TORTURE TRAIL: It costs 50 pct more to build a good-bad road than a good-smooth one, say Chrysler engineers. They're referring to their auto proving grounds at Chelsea, Mich., where watermelon-sized rocks are painstakingly set in the black top, and a washboard surface is precisely engineered. The aim: Cram years of driving hazards into a few miles. The Chrysler test track also includes a duplicate of the steepest paved hill in the country, and a 100 ft puddle that is never allowed to dry up.

suppliers were cited for major engineering and design advances which have made trucks safer to operate.

Why the Record Is Better—Among the improvements pointed out:

Vehicle durability has nearly doubled. Low priced trucks often operate 100,000 miles without major repairs; larger models double and triple that figure.

Improved brake linings, using new synthetic resins, now average 35,000 miles for urban operation and 150,000 miles on the highway. Emergency braking systems now nullify air leaks in the system by automatically applying auxiliary braking power.

Higher engine horsepower now enables large trucks to keep up with the normal flow of traffic.

The Driver—Driver vision has been improved with new cab-forward designs, more glass, better windshield washers and defrosters, headlights and mirrors.

Drivers are aided in maintaining control by such as power steering, power brakes and automatic transmissions.

And finally, driver fatigue has been lessened through advanced suspension designs, scientific seat design, improved cab ventilation and insulation.

Truck's Work — Almost as an afterthought, AMA noted that trucks now carry 78 pct of all U. S. freight tonnage, and that for every $100 of the country's gross national product, 26 miles of truck travel is required.

Quality Is Stressed

Quality—or else; was the law laid down to about 1000 Ford Motor Co. production parts suppliers at a four-day meeting recently in Dearborn. Laying down the law: Earl G. Ward, purchasing vice president.

New quality demands will apply to company divisions as well as outside suppliers, he said, and "will be applied universally and strictly."

The Bull of the Woods

GO AHEAD, DRINK--I'LL HOLD TH' HANDLE FER YOU!
NEVER MIND-- I'M NO CRIPPLE-- I CAN HANDLE MY OWN HANDLES! TAKE CARE OF YOUR OWN BUSINESS-- I'LL TEND TO MINE!
I THINK THAT UNGRATEFULNESS IS TH' BIGGEST REASON THAT WE NEVER CAN HAVE A PERFICK LIFE ON EARTH-- NO UTOPIA WITH PEOPLE HAVING THAT ATTITUDE!
NO, THAT'S NOT TH' MAIN REASON--IT'S BECAUSE A LOT OF BIRDS THAT TREAT YOU WITH EXTREME KINDNESS ARE JUST PRIMIN' YOU FER A DIRTY TRICK--AND IF YOU'RE FOXY ENOUGH TO SPOT THEM KIND YOU'VE GOT UTOPIA ENOUGH!
T.M. Reg. U.S. Pat. Off.
THE FACE WASHER
1959 by NEA Service, Inc.

Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 8, 1959*	106,484	11,032
Aug. 1, 1959	124,849	21,227
Aug. 9, 1958	65,614	15,452
Aug. 2, 1958	63,719	16,655
TO DATE 1959	3,950,975	781,265
TO DATE 1958	2,642,160	521,910

*Preliminary Source: Ward's Reports

What Ford Wants—He noted that Ford "demands many services from suppliers. We draw on your engineering and technical talent to improve our products. We expect you to ship quantities of parts to schedule. We expect your prices to be competitive." "But," he added, these services "must be subordinated to quality."

Assembly Lines Close

Automobile assembly lines are grinding to a halt. By the end of this week only Chevrolet, Ford, and Mercury-Edsel-Lincoln will still be assembling cars.

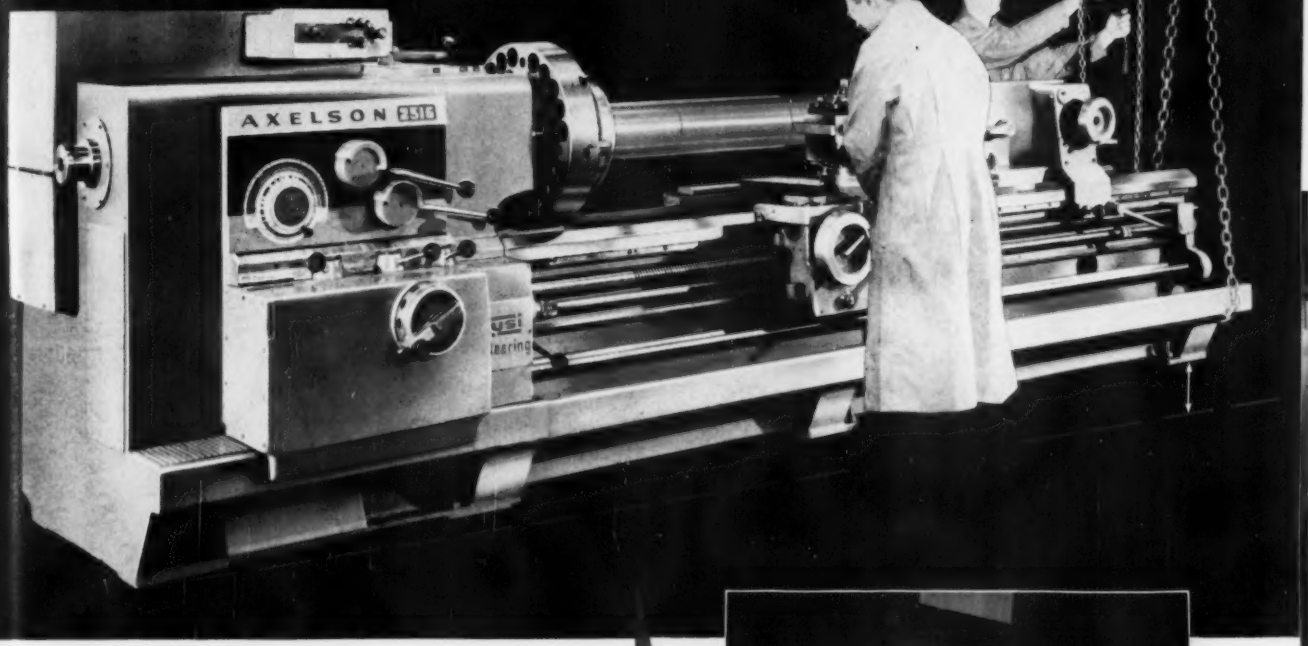
M-E-L plants will start closing down lines at the end of next week, with all plants out by the end of the following week. Chevrolet's schedule is much the same. Ford hasn't revealed dates for its plant closings.

Shut—The home plants of Oldsmobile and Pontiac closed last week, joining Buick and Cadillac which shut down the previous week. Seven B-O-P assembly plants had closed the previous week.

The last of Chrysler Corp.'s assembly plants, at Newark, Del., and Los Angeles, also ended production last week. The company's Imperial assembly plant has been down five weeks.

Smaller Companies—Studebaker-Packard ended production of its 1959 models several weeks ago and is expected to resume operations soon. American Motors had planned to end its model year at the end of last week, but may have carried the close-out period over into this week.

WHAT DOES THIS STARTLING TEST MADE ON THE NEW CLEARING-AXELSON LATHE MEAN TO YOU?



In a recent demonstration before editors of the metalworking press, Clearing repeatedly raised and lowered one end of the Blue Chip lathe with an overhead crane—while the lathe was running. Accuracy on the ¾" cut in progress was held within .002" across the full length of the workpiece.

Certainly, you aren't going to operate a lathe with one end hanging from a crane. The test we made with the new Blue Chip lathe simply demonstrates the enormous rigidity of its all-steel bed. Why such rigidity? Demands placed on lathes by ceramic and sintered carbide tooling necessitates extreme stiffness and rugged construction in order to hold tolerances on heavy, high-speed cuts.

Here's What This Rugged Construction Means To You

Greatly Improved Tool Life—Reduced Breakage. Production Potential Unheard of With Conventional Equipment.

But there is more—much more—than just 18 times greater rigidity in the Blue Chip story: For all the facts write for the Clearing-Axelson Blue Chip Lathe catalog. We'll send it promptly. Clearing also distributes the Clearing-Harrison Lathe in sizes from 11" to 16".

Write for New Catalog on Blue Chip Lathe

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Congress Cool to Strike Action

But Long Shutdown Could Provoke New Laws

Except for a few isolated demands, Congress isn't ready to call the strike a national emergency—yet.

But both parties are anxious to prevent a long strike from damaging buying power or employment.—By G. H. Baker.

▪ If the steel strike drags along for several more weeks, clamor for legislative action to end it will definitely increase.

But right now Congress is cool toward the idea of writing any new Federal laws to deal with the strike. Except for a few isolated political demands for legislation designed to force a settlement, there is general agreement in both the Senate and the House that the strike has not yet caused a national emergency.

Bipartisan Support—However, a prolonged strike could change the Washington picture. Both political parties are anxious to stave off the loss of purchasing power and the rising unemployment that's beginning to result from the steel strike.

O'Mahoney on Prices—Sen. O'Mahoney, (D.-Wyo.), a longtime critic of the steel industry, is renewing demands for enactment of his so-called price notification bill as a solution to the industry's labor problems. If all steel producers and other manufacturers have to obtain government permission before raising their prices, there won't be any strikes because price rises will be discouraged, he says.

Another Senate critic of the steel industry, Sen. Symington, (D.-Mo.), continues to demand that President Eisenhower "do something" to end the strike. By "doing something," Mr. Symington says the President should invite the parties in the wage negotiations to meet at the White House to discuss the issues.

More Fact-Finding? — Also, he wants the President to appoint a fact-finding board to make recommendations on settlement terms. This suggestion is part of the union-backed pattern of government involvement. The United Steelworkers shrewdly calculates its chances for winning the strike on its terms will be enormously improved if it can succeed in forcing government mediation on the negotiators.

Reform Footdragging — In general, however, Congress remains neutral to legislative action involving the steel strike. Congressmen are also relucant to take action on labor reform, especially those from industrial areas.

An avalanche of mail demanding labor reform is sweeping over the Congress. The record-high stacks of letters show the public wants positive action to end racketeering in unions. But congressmen elected in whole or part with union money are not anxious to vote for a check-rein on their friends.

More Than Missiles Needed

▪ Ground forces will continue to demand a substantial part of U. S. defense money, despite rapid development of long-range missiles.

Adding harder-hitting intercontinental missiles to the national arsenal is not enough to head off the Communist military threat. This is the reasoning of top army strategists.

They point out the Reds have modernized their ground forces extensively. By using them as a threat, and by starting fringe wars with puppet forces, the Kremlin bosses can divert and weaken America's armed strength. That is, unless U. S. ground forces are ready with countermeasures.

Ground Forces Needed — The strategists do not concede that the perfection of Atlas or any successor ICBM will nullify the importance of the basic ground arms. On the contrary, they insist, the forces available for actual fighting will be land-based units, plus sea and air support.

The concept of the Army as a first-line element of U. S. military power has just been restated by Gen. Lyman L. Lemnitzer. Speaking as the Army chief of staff, he said recently that a nuclear standoff can be expected not many years from now. It will occur when the power to strike by missiles and to retaliate will become too dangerous for any nation to launch a nuclear war.

Back to the Rifle—To be combat-ready, the nation must equip its present forces to fight with everything short of long-range, atomic-tipped weapons, as Gen. Lemnitzer sees the defense problem. The best in leadership, arms, equipment, and skills will be needed to put these forces in fighting trim.

The X-ray fluorescence analyzer, one of the many modern instruments in the chemical laboratory, helps Jessop make certain you get the specified per cent of each alloy in your specialty steel.

"How X-rays help Jessop give you exactly what you want in alloy steels . . ."

—C. M. Carlisle, Director of Analytical Chemistry

"What's happening here? As the stylus in the X-ray fluorescence analyzer draws red lines on the graph, the Jessop chemist determines the exact per cent of each alloy in a sample of specialty steel.

"Based on this analysis, the melter may ask for the addition of, say, molybdenum to the molten steel now in electric arc furnace No. 3.

"How's it done? Bombarded by X-rays, the alloys in the sample of steel are radiating secondary rays. Converted into electrical energy, the rays are causing the stylus to move and draw red lines on the graph . . . indicating the types and per cent of alloys in the steel sample."

In the Jessop chemical laboratory, the X-ray fluorescence analyzer and many other modern instruments help us make certain you get the exact chemical composition specified in your order. This chemical laboratory is one more reason for your confidence in ordering specialty steels from Jessop. *Specify Jessop . . . and then relax!*

VMA 6728

JESSOP
STEEL COMPANY
Washington, Pennsylvania

Subsidiary Companies:
Green River Steel Corporation, Owensboro, Kentucky • Jessop Steel International Corporation, New York City
Jessop Steel of Canada, Ltd., Wallaceburg, Ontario • Steel Warehousing Corporation, Chicago, Ill.

Stainless, alloy, tool, cast-to-shape, and forging steels, precision ground flat stock, and other specialty steels

Why Steel Imports Worry West

Tonnage This Year Doubling Last Year's Rate

Since the steel strike began, more imports are moving into the West Coast area.

But problem is a long-range one because overseas competitors can easily undersell U. S. mills.—By R. R. Kay.

■ Steel imports are moving into the Farwest at a faster tempo since the steel strike began.

But long after the strike is settled domestic mills will still be concerned about overseas competitors. That's because, year in and year out, the amount of imported steel keeps rising at an alarming rate.

Bargains in Pipe—To ask whether foreign steel is hurting West Coast mills is an academic question.

For example:

Almost one-third of the plumbers pipe sold in the Farwest in 1958 came from Belgium, West Germany, Australia, and other foreign countries. This pipe sells for $30 a ton below the market.

Tonnage Above '58—The West Coast received 225,955 tons of foreign-made steel in the first five months of this year. During the same period in 1958 only 96,872 tons came in.

Some 6600 tons of steel bars from West Germany were recently unloaded in San Diego for transshipment to Mexicali, Baja California, Mexico. It's understood that a new plant there plans to import about 2000 tons of bars monthly.

Pricing Hurts—Recently, 22 carloads of steel plate from Japan were delivered to a manufacturer in Fontana, Calif., right in Kaiser Steel's backyard. This order was placed long before the strike started.

Jack L. Ashby, president of Kaiser, says the industry is being underpriced in its own market by steel made abroad.

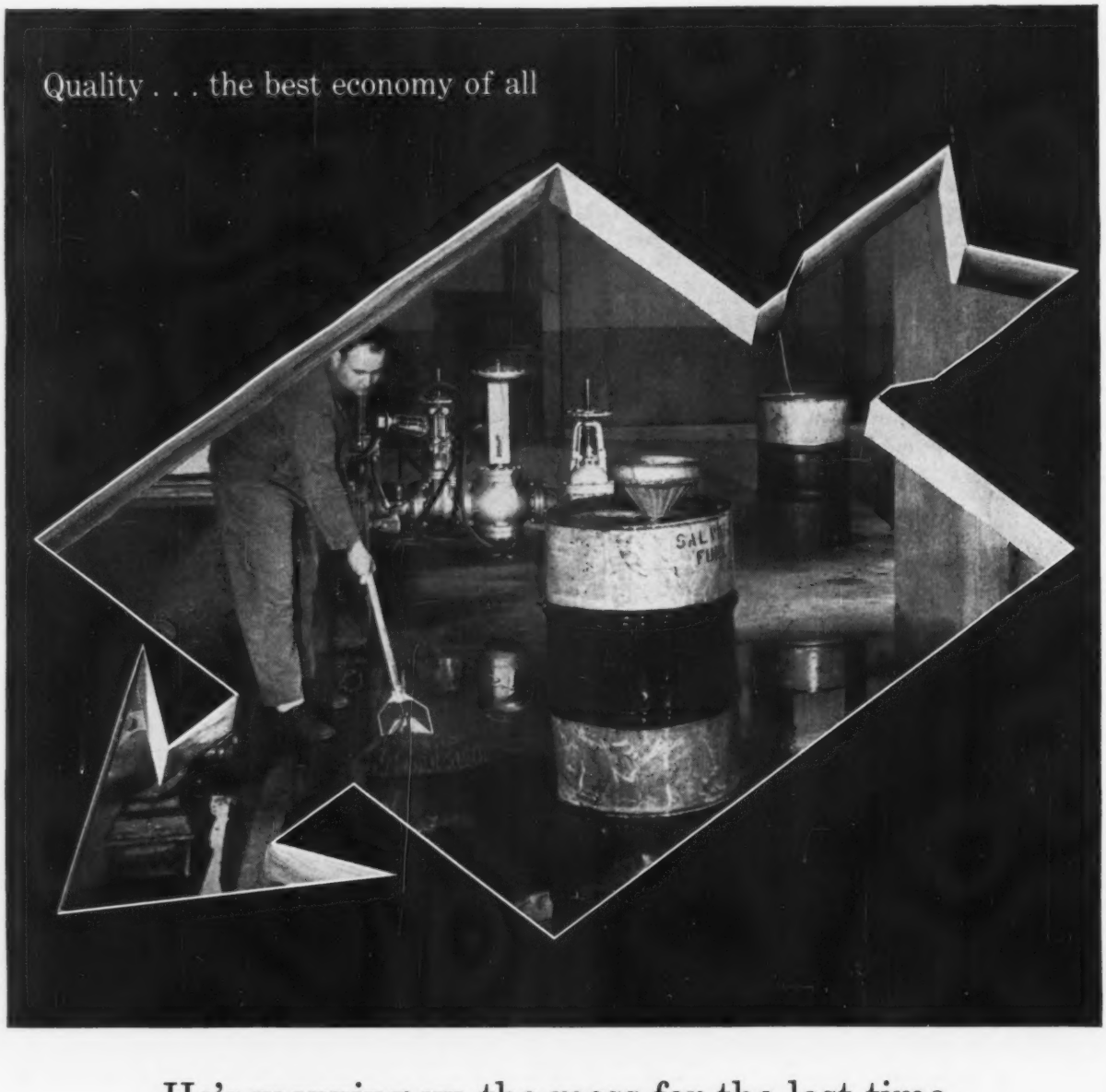
"How can foreign producers make steel, ship it thousands of miles to customers right next door to our plant, and still be able to undersell us?" Mr. Ashby says the answer is simple: Foreign steelworkers earn only a fraction of what our workers do.

Steel importing is big business on the West Coast. Twenty-five companies in the field just formed the West Coast Metal Importers Assn. Its head man is Al Perrish, president, Winter, Wolff & Co.

Aims of the group: Protecting importers and their products from harassment. Combating discrimination against imports.

Drawing a Bead With the Red-Eye

FOXHOLE MOBILITY: Marine marksman takes aim with the Red-Eye, new surface-to-air missile, developed by Convair Div. of General Dynamics Corp. The weapon, designed for use against low strafing and bombing aircraft, can be carried by combat troops, fired from the shoulder.



He's mopping up the mess for the last time

At a leading aircraft research center, high-frequency vibration caused severe oil leakage from hydraulic lines servicing a huge wind tunnel. Many man-hours each month were wasted cleaning up the basement floor underneath, even though drip pans were used extensively.

Now, after a change to a Suntac oil, the vibration-caused leakage has been reduced to a point where "mop-up" is not needed. Hydraulic-fluid consumption has been cut by 4000 gallons a year. That's economy! That's Sun quality—the best economy of all.

If your plant is troubled with a leaky system, a Suntac antileak hydraulic oil can save you money, too. Ask your Sun representative to show you the Suntac desk-top demonstration, or write direct to SUN OIL COMPANY, *Philadelphia 3, Pa., Dept. IA-8. In Canada: Sun Oil Company Limited, Toronto and Montreal.*

SUNOCO

MAKERS OF FAMOUS CUSTOM-BLENDED BLUE SUNOCO GASOLINES

To Fabricate for Outer Space—

These Tools and Processes Are Needed

Aerospace Industries Assn. has drawn up a list of critical needs for aerospace work.

It's a big challenge for metalworking and its related industries.—By E. J. Egan, Jr.

▪ You'd better buy a pair of asbestos gloves if you plan to fabricate metal parts for aircraft and missiles over the next 10 years.

Machining and forming at room temperatures doesn't seem to be in the picture for the ultra-high-strength alloys the aerospace engineers figure on using: alloy steels with 300,000-psi yield strengths and titanium alloys in the 200,000-psi range.

Too Hot or Too Cold—To whip these materials into shape, fabricators will probably have to handle them at either very low temperatures or very high ones, possibly up to 2000°F. In either case, some nice, thick asbestos gloves will come in handy.

This is just a peek at what will be involved over the next decade if the U. S. is to stay in the running for space-age supremacy. There's more, lots more, in a technological "shopping list" that's just been compiled by the Aerospace Industries Assn.

Mind you, that's all this is—just a shopping list. So far, the aerospace industries aren't too sure there's a store they can take it to. That's where the metalworking industry comes in; together with the chemical, electrical, electronics and other industries, it will have to set up the aerospace store and stock the shelves.

Shopping List — Here's a run-down of some of the more critical merchandise items AIA says it's got to have from the metalworking industry, and the sooner the better:

Shock forming equipment for hard sheet alloys.

Methods to form materials immersed in heat treating solutions.

Closer-tolerance extrusion and forging techniques.

Numerical control techniques for chemical, electric discharge, ultrasonic, and sub-zero machines and processes.

Tracer-proximity control devices for critical operations that can't be handled by programmed numerical control.

Cut-off saws that make use of synthetic industrial diamonds.

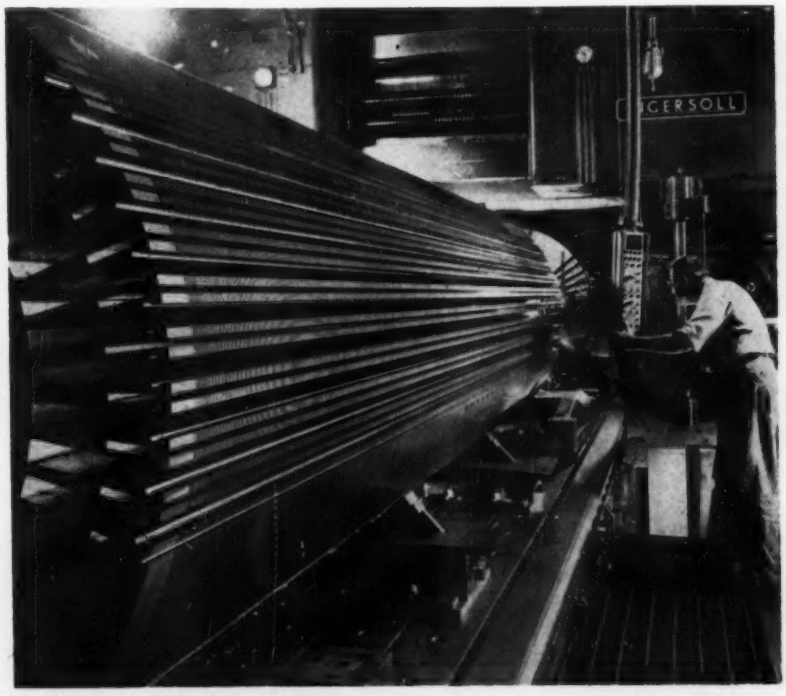
New coolants and lubricants for sub-zero machining and other metal forming techniques.

Chemical milling developments to achieve closer tolerances and better surface finishes on high-strength materials.

Higher metal removal rates for all types of machining and grinding.

Come up with some practical equipment or processes in any of these areas and your cash register will ring long and loud.

Atom Power on the Way



MILLING FOR MICHIGAN: Generator rotor for Enrico Fermi Atomic Power plant near Monroe, Mich., is slot-milled in Allis-Chalmers' Milwaukee shops.

INDUSTRIAL BRIEFS

Ready for Stage Two—J. Bishop & Co. Platinum Works has completed the first stage of its multi-million-dollar expansion program in the Delaware Valley area. A modern 2-story mill has been erected to include 161,920 sq ft of manufacturing and office space. The facility houses redrawing facilities for small diameter stainless steel, nickel and nickel alloy, super and exotic tubing.

Forecast for 1974?—A study of weather conditions as they may affect air travel during the next 15 years of the jet age will be undertaken by Borg-Warner Corp. under a contract awarded by the Federal Aviation Agency of the U. S. Government. The contract will involve the expenditure of nearly $600,000.

Space for Space Work—Conax Corp., manufacturer of components for the missiles, aircraft and industrial equipment fields, will build a $250,000 plant for its industrial products division. The plant will be built in Cheektowaga, a suburb of Buffalo. Conax's explosives products division will remain at the present plant site in Cheektowaga.

Another Addition—J. & A. Keller Machine Co., Inc., has started a 10,000 sq ft expansion of its plant in Tonawanda, N. Y. The $150,000 expansion will increase Keller's plant to 46,000 sq ft. Keller manufactures automated machinery and experimental equipment for the missile, aircraft and atomic industries.

A Big Lift—American Hoist & Derrick Co., St. Paul, Minn., has acquired Hetherington & Berner, Indianapolis manufacturers of stationary and portable asphalt plants and paving machinery. Mr. D. R. Berner, H. & B. vice president, will be general manager of the new subsidiary. Both Indianapolis plants will continue to operate under the Hetherington & Berner name.

Hot Facility—Vitro Engineering Co., Div. of Vitro Corp. of America, will design and engineer a $1.7 million high-level radiation lab for the U. S. Naval Research Laboratory, Washington, D. C. The building will contain five hot cells for remote-controlled operations at working radiation levels ranging from 1,000 to 10,000 curies.

More on Vitro — Vitro Rare Metals Co., Cannonsburg, Pa., a div. of Vitro Corp. of America, has commenced production of nickel sulfate, nickel chloride and nickel carbonate for electroplating operations. These products are distributed by Berksire Chemicals, Inc., a Vitro subsidiary and exclusive sales agent for all Vitro chemical products.

ASM Leader—Walter Crafts, associate director, technology, Union Carbide Metals Co., has been named new president of the American Society for Metals.

Abrasive List — Pressure Blast Mfg. Co. has issued a new abrasive price sheet for wet blasting equipment. A wide variety of abrasives ranging in particle size from 75 to 5000 mesh are available on the sheet. The list can be obtained from the company at 27 Pleasant St., Manchester, Conn.

"Understand you're looking for men with leadership ability."

Meeting the Market — Michigan Seamless Tube Co. is planning to enlarge its manufacturing capacity to handle volume production of its new finned seamless steel tubing. The company also plans to double the capacity of the Texas Div. and raise the corporation's total capacity more than 45 pct within the coming year.

Cross Country — Hoeganaes Sponge Iron Corp., Riverton, N. J., makers of sponge iron and special alloy powders is opening up a new warehouse in Vernon, Calif.

IBM Datacenter — International Business Machines Corp. will establish 25 to 35 Datacenters in major cities. A Wall Street Datacenter will be erected in New York's financial district next March. In April a Chicago Datacenter will be opened and in May a Los Angeles facility. They will be established by IBM's Data Processing Division.

More Beryllium—The Beryllium Corp. has completed expansion of its beryllium metal fabrication division at Hazleton, Pa. About 12,000 sq ft of space has been added to production facilities. New plant capacity provides for three separate vacuum hot press furnace installations.

Room for Research—Union Carbide Corp. is building a facility to house the Union Carbide Research Institute. The building will be located at Union Carbide's Westchester County 280-acre property at Eastview, near Tarrytown, N. Y. On the same site a technical lab, which will be used by Union Carbide Chemicals Co., is nearing completion.

Cash for Savings—R. K. Barker, asst. turn foreman at Weirton Steel Co. has been awarded more than $700 for a suggestion he submitted under the Ideas for Improvement program. The award was for Mr. Barker's idea to reduce maintenance costs on the tin mill annealing ovens. It is his sixth IFI award.

Drawbenches and Cold Draw Equipment

• As a cold draw specialist for better than 50 years, Aetna produces a full range of equipment and accessories . . . Drawbenches from 20 to 200 feet drawn length, with pulling capacities from 1,000 to 300,000 pounds in single, double, triple or five draw; single chain or dual chain; accessory items, such as Tube Pointers, Piercing Mills, Run-Out Tables, Pinch Rolls, Shears, Straighteners, Carriages and Drives.

New Aetna ideas for improving production include the 5-draw Drawbench and a new type of Bull Block. The 5-draw has changed the entire cold drawn business. The Bull Block makes possible much more economical production of long-length, small-diameter, thin-wall copper tubing. Aetna's Block is noted for its absolute accuracy in transversing the die to the drum during drawing and control of speeds from zero to 2000 feet per minute.

But Aetna's main effort centers on the design and building of complete plants or complete automatic lines. Aetna's reputation is built on design pioneering and equipment built to produce a quality product with the ruggedness to take heavy loads as needed.

Aetna's customers include every major producer of cold drawn material for tubes, bars and shapes. This is Aetna equipment in the recently completed plant of The American Brass Co. at Los Angeles.

BLAW-KNOX

BLAW-KNOX COMPANY

Aetna-Standard Division

Frick Bldg., Pittsburgh, Pa.

"The difference is almost invisible

...but it saved us nearly $20,000"

Royal McBee had been using solid rivets and a staking machine to put together an assembly for their Royal electric typewriter. Lots of hand operations, lots of chances for scrap-making fumbles. Still, production costs were satisfactory . . . until suddenly the production rate had to be almost doubled. Costs really jumped.

Their TRS man suggested dropping solid rivets for semi-tubular ones, automatically machine-fed and set, with a special TRS-designed loading fixture to fumble-proof the whole operation. Result: the increased number of perfect assemblies a day . . . with the same operating crew using standard TRS riveters already available at Royal McBee.

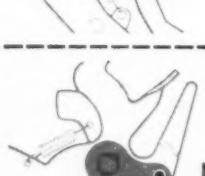
Let the TRS man look over your assemblies. You'll find that he has the viewpoint of a manufacturing engineer, and an unusual knack for making fastening simpler, faster, better.

Of course he will recommend TRS rivets. But he will give you sensible reasons why they are more reliable in essential qualities and uniformity. Superior Quality Control is one significant result of a five-year modernization of this pioneer company. Modernization of people, policies, production and service facilities. *You'll like to do business with the new TRS . . . we'll make sure of it.*

THE CHANGE THE TRS MAN MADE

OLD

Two operators assembled 2 solid rivets and 1 shouldered stud into countersunk holes of trip pawl, placed this on a tray, then placed carrier arm over stud. Third operator positioned bearing plate over rivets and stud, lifted the loose assembly from the tray and slid it under a staking machine to stake the 2 rivets.



NEW

The countersink is eliminated, in all three locations. On the special TRS sliding fixture, each operator assembles all components over 2 locating pins, with the stud in place. The loaded fixture is then slid into riveting position, and the riveter is actuated by a foot lever to fasten the assembly with 2 semi-tubular rivets.

Don't Buy Riveting Machines until you learn how the TRS **PAR** *process revolutionizes riveting*

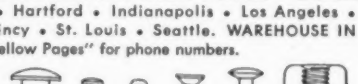
TRS

TUBULAR RIVET & STUD COMPANY

QUINCY 70, MASSACHUSETTS • **TRS** SALES OFFICES: Atlanta • Buffalo • Charlotte • Chicago Cleveland • Dallas • Detroit • Hartford • Indianapolis • Los Angeles • New York Philadelphia • Pittsfield • Quincy • St. Louis • Seattle. WAREHOUSE IN CHICAGO

See "Yellow Pages" for phone numbers.

If it's a Tubular Rivet TRS makes it . . . and Better



F. A. Fielder, elected vice president and general manager, Loewy-Hydropress Div., Baldwin - Lima-Hamilton Corp.

The Dow Metal Products Co., Div. of The Dow Chemical Co.—**Hubert Fruehauf,** named president; **Dr. J. D. Hanawalt,** vice president; **H. H. Lyon,** vice president and chief financial officer; **D. H. Gilmore,** vice president and sales manager; **A. W. Winston, Sr.,** asst. to the president and secretary.

Aetna Ball & Roller Bearing Co. —**J. J. Rozner,** elected president.

Miniature Precision Bearings, Inc.—**R. I. Kern,** named vice president, marketing.

Iroquois Steel & Iron Co., Scrap Iron & Steel Div.—**Walter Stern,** appointed vice president.

Alliance Machine Co.—**F. K. Tanner,** appointed general superintendent.

Screw & Bolt Corp. of America —**S. M. Sipe,** appointed manager, sales, Pittsburgh district.

A. M. Byers Co.—**W. J. Hamley,** appointed planner, South Side plant.

J. A. Roebling's Sons Corp., Cold Rolled Steel Products Div.—**R. M. Lamborn,** appointed manufacturing manager.

Westinghouse Electric Corp., Air Conditioning Div.—**T. J. D. Dunphy,** appointed manager marketing services; **C. E. Cannon,** named manager, sales promotion and training.

W. L. Rodich, appointed president, Continental-Diamond Fibre Corp.

Linde Co.—**J. E. Dato,** appointed sales manager, electric welding.

The Babcock & Wilcox Co., Tubular Products Div.—**T. W. Wright,** named asst. manager, New York district sales office.

Republic Steel Corp. — **T. E. Thorpe,** appointed asst. superintendent, cold strip mill, Gadsden plant.

Republic Steel Corp. — **W. C. Schnackel,** appointed asst. district sales manager, Detroit; **W. L. Myers,** appointed asst. manager, sales, Bar Div., Cleveland.

W. H. Combs, elected vice president, Great Lakes Carbon Corp.

W. H. Johnstone, elected vice president, Financial and Legal, Bethlehem Steel Co.

The Cooper - Bessemer Corp.—**D. L. Reed,** appointed manager, packaged compressor sales.

A. O. Smith Corp.—**R. N. Stime,** named asst. director, merchandising; E. A. Lukowski, named group merchandising manager.

Wheeling Steel Corp.—**S. A. Meder,** named sales manager, Pacific Coast territory.

Revere Copper & Brass Inc.—**J. H. Hinman,** appointed manager,

(Continued on P. 75)

E. L. Kanter, elected secretary, U. S. Industries, Inc.

000 Series Angle Wrenches
NEW
75% more output . . . for
$3750 Dividend Dollars/year.

01 Series Angle Wrench
NEW
44.4% more output . . . for
$2220 Dividend Dollars/year.

4 NEW SERIES IR ANGLE WRENCHES

NEW designs NEW speeds NEW power to give you an

ANNUAL DIVIDEND on your PAYROLL DOLLARS

If your operators are using older model angle wrenches, you can increase their man-hour productivity by as much as $3750 Payroll Dollars in one year, just by replacing the older tools with one of the four new I-R designs.

Multiply these *Annual Dividends* by the number of angle wrench operators in your plant, and you can see why management today is taking a new look at portable tool operations.

There's a fast, easy way to calculate the amount of *Dividend on Payroll Dollars* these new I-R angle wrenches can help you earn in just one year—without adding to your present payroll.

It's yours without obligation. To get it, call your I-R AIRengineer today. Or write Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

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11 Broadway, New York 4, N.Y.

Tools plus AIRengineering increase output per man

8-922

(Continued from P. 73)

aluminum industrial sales; **W. T. Larson,** appointed manager, aluminum extrusions and building product sales; **R. C. Spooner,** appointed manager, aluminum sales, Dallas Div.

The Carpenter Steel Co.—**O. T. Thompson,** becomes district manager, Detroit; **H. H. Moeller,** promoted to branch manager, Detroit.

D. L. Rehberg, appointed asst. controller, Jones & Laughlin Steel Corp.

Daystrom, Inc., Daystrom-Weston Sales Div.—**R. K. Patterson,** appointed manager, Northwest district.

The Yale & Towne Mfg. Co., Yale Materials Handling Div.—**E. D. Hoben,** appointed chief engineer, government contracts.

R. E. Halloran, named Pacific Coast sales manager, Tubular Products Div., The Babcock & Wilcox Co.

C. A. Wishart, elected executive vice president, Reynolds International, Inc.

Hooker Chemical Corp., Phosphorus Div. — **J. W. Bunch,** appointed works manager, Dallas, Tex., plant.

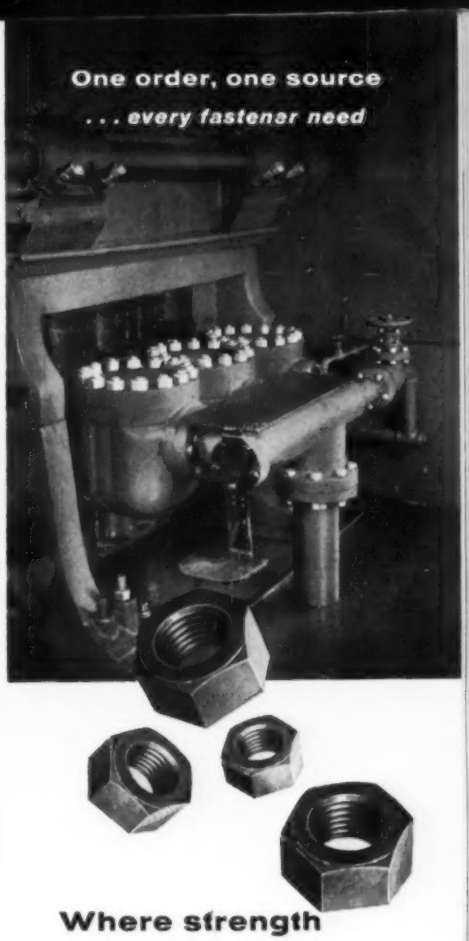
Kaiser Aluminum & Chemical Sales, Inc.—**C. R. Lynde,** appointed service manager, Oakland sales district.

A. D. Reynolds, elected executive vice president, Reynolds International, Inc.

C. G. Hussey & Co. — **David Herrin,** named manager, Cincinnati district office and warehouse.

Foote Mineral Co.—**Dr. J. B. Bravo,** named group leader, new products and processes; **Dr. M. M. Markowitz,** named group leader, thermodynamic and physical chemistry group; **L. J. Reader,** pro-

(Continued on P. 79)



Where strength is a factor

HOT FORMED NUTS

. . . Induction heated

Through induction heating and modern forming equipment, these Screw and Bolt nuts attain superior finish, wrenching qualities and tolerances.

The instant heating process eliminates cold working strains prevalent in conventional cold made nuts, minimizing oxidation. Then modern equipment forms these nuts to geometric perfection and exceptionally close tolerances . . . for secure, snug-fitting connections.

When rugged operating conditions exist, be sure . . . specify hot formed nuts by Screw and Bolt. Send for illustrated brochure.

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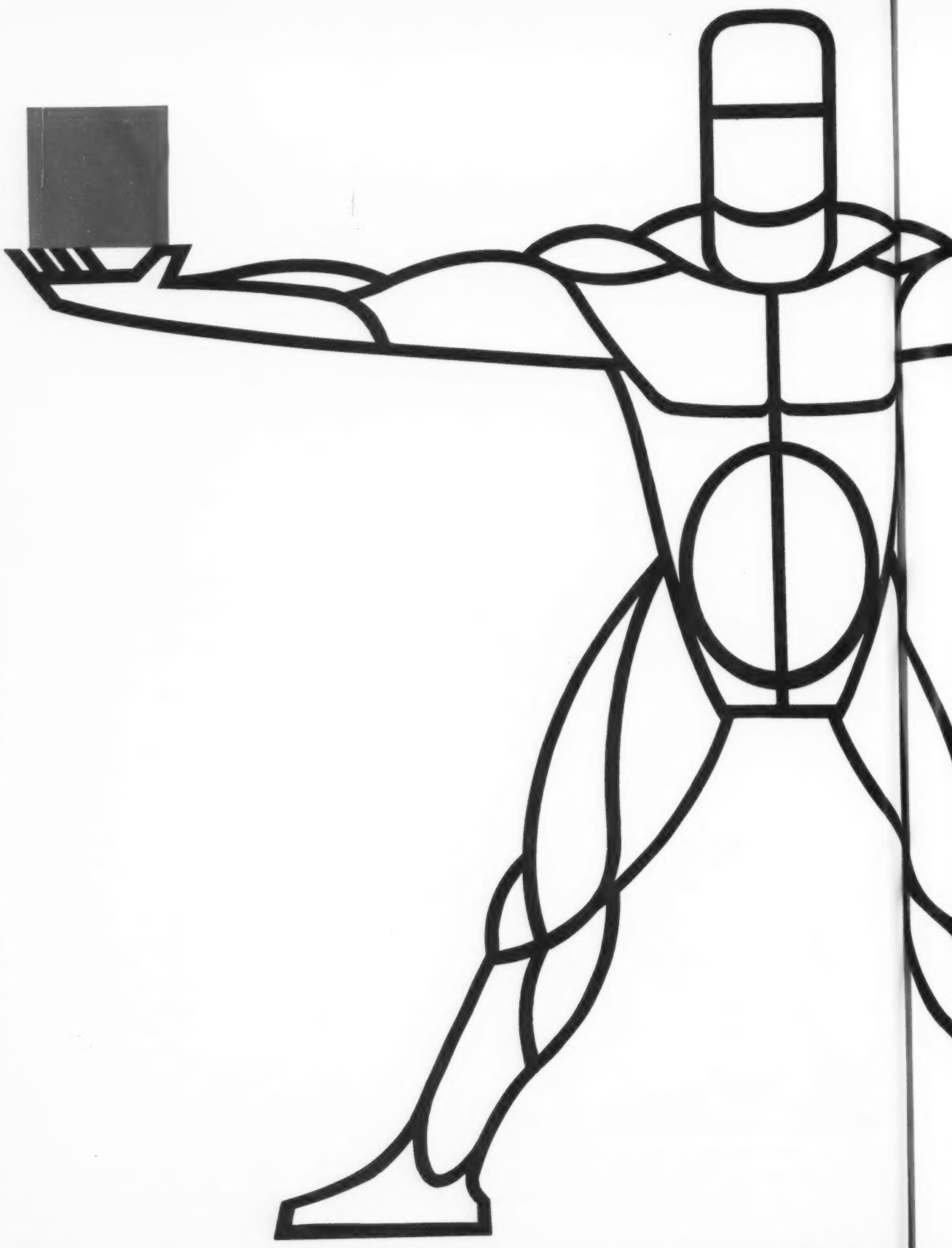
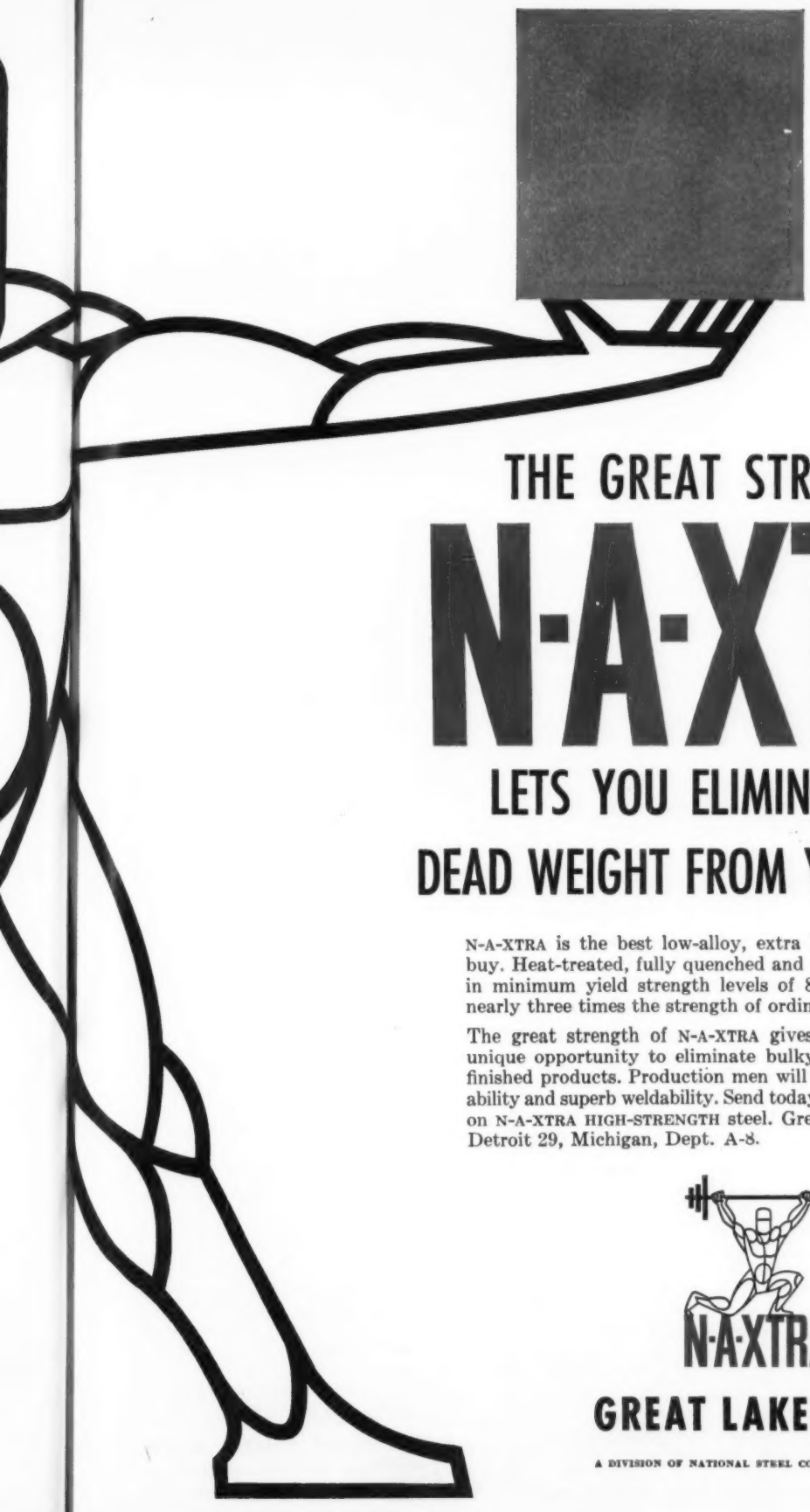
Formerly Pittsburgh Screw and Bolt Corporation

America's Most Complete Line of Industrial Fasteners





THE GREAT STRENGTH OF N-A-XTRA LETS YOU ELIMINATE COSTLY DEAD WEIGHT FROM YOUR PRODUCTS

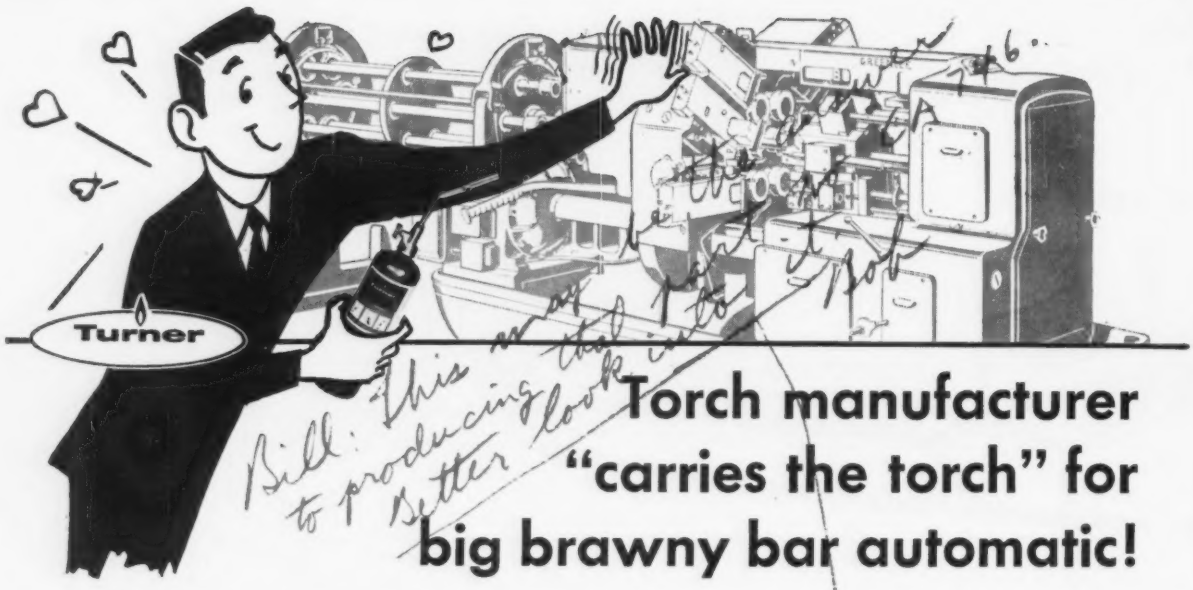
N-A-XTRA is the best low-alloy, extra high-strength steel you can buy. Heat-treated, fully quenched and tempered, it's now available in minimum yield strength levels of 80,000—110,000 psi. This is nearly three times the strength of ordinary carbon steel.

The great strength of N-A-XTRA gives engineers and designers a unique opportunity to eliminate bulky, useless dead weight from finished products. Production men will delight in its superior formability and superb weldability. Send today for our illustrated brochure on N-A-XTRA HIGH-STRENGTH steel. Great Lakes Steel Corporation, Detroit 29, Michigan, Dept. A-8.

N-A-XTRA

GREAT LAKES STEEL

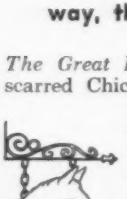
A DIVISION OF NATIONAL STEEL CORPORATION



Torch manufacturer "carries the torch" for big brawny bar automatic!

Growth of a company from the founder's first fond dream to a leading place in the industry is a matter of continuing product improvement, sound management, ever-increasing efficiency, keeping pace with changing times. Read what a line of machines named Greenlee means to a company named Turner . . . and why, out Sycamore-way, they "just love those Greenlee Bar Automatics" . . .

The Great Fire of 1871 struck and scarred Chicago the very same year that enterprising Edward S. Turner "hung out the shingle" at 4 LaSalle Avenue and proclaimed to one and all that The Turner Brass Works was ready for business.



It's a long way from the Horse Age to the Age of H-Power . . . 1871 to 1959. A whole way of living changed, new products came to the fore. Alert, trend-conscious Turner kept pace with the advancing times, moved the factory to Sycamore, Illinois in 1906 . . . expanded its operations steadily until today the Turner Corporation spans 100,000 square feet of factory space, and turns out products ranging from propane torches to plumbing fixture fittings—blow torches to diesel engine starting aids — camp cook-stoves and lanterns to furnaces and furniture hardware.

Along that route Turner continually met the old familiar problem: *How to get high-speed production and maintain top quality.*

That's where Greenlee enters the picture, and the Case of the Propane Torch is a typical example. It's a "How-They-Dunit" that may hold eye-opening suggestions for some of *your* production problems.

Turner's Propane Torch suddenly became a "hot" item — hot as its glowing tip. An expanding nation-wide need for it in home and shop at length blossomed into an enormous increase in demand. The order went out: "Turn 'em out faster — but keep quality up — keep cost in line." How to do it was the question.

Turner management launched an exhaustive investigation of top-rated production machines on the market. They probed, tested, ran trial runs. Eventually they found a machine that seemed to do everything they asked. It took 9/16″ round brass stock, gave it a merry whirl — 298 surface feet per minute on stock diameter—2029 revolutions per minute.

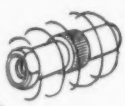
Quality tested consistently high, rejects were held to a minimum, a complete operation was eliminated, as the husky Greenlee Bar Automatics "rolled 'em out" with the tireless gait of a 'round-the-clock marathoner.

That's when a long and happy association began. For shortly thereafter, the Turner P.A.'s signature was on a purchase order for a battery of Greenlee Automatics with special attachments.

A look at the Job Progress schedule will give you an idea of how efficiently they tick off a 6-stage operation on mixer tubes:

1st Position:
The big Greenlee Cam-Feed 1-5/8″ Six-Spindle Bar Automatic uses a 1″ tool slide stroke with .0063 inch feed on the endworking tools. Stock is fed out to length during indexing, spot-drilled, knurled (using a standard plunge-type knurl holder and a two-roll roller rest)

2nd Position:
The mixer tube is faced by a knee turner while a .277 inch diameter drill, mounted on a high-speed drilling attachment, drills to depth.



3rd Position:
Outside diameter is sized by a standard dovetail form tool. A .187 inch hole is drilled partway, as a two-roll roller rest supports the part.

4th Position:
Using a standard milling attachment mounted on the tool slide, the two parallel flats are milled. (Attachment consists of two milling cutters mounted on a keyed arbor in the milling head). Milling head rotates at the same r.p.m. as the workpiece; internal gearing in the attachment rotates the milling cutters at proper speed for the milling cut.

5th Position:
The .187 inch hole is drilled to depth while a standard cut-off tool breaks down for cut-off.

6th Position:
A 5/16″ — 27 thread is tapped, and the part is cut off.

FINAL SCORE:

580 high-quality mixer tubes per hour at gross production rate. One complete operation eliminated. Rejects at an all-time low. . . . No wonder, out Sycamore-way, they "just love those Greenlee Bar Automatics" — big — brawny — and *bears for the jobs where you've got to keep your quality reputation as you keep up with market demand.*

Question:
Have *you* looked into Greenlee, lately, for quality on a production basis?

GREENLEE BROS. & CO.
GREENLEE 1867 Mason Avenue
Rockford, Illinois

(Continued from P. 75)

moted to group leader, technical services, Berwyn, Pa., laboratories.

G. H. Blank, appointed sales manager, Joseph T. Ryerson & Son, Inc., Buffalo, N. Y.

Firth Sterling Inc., Carbide Div. —**W. E. Montgomery,** promoted to chief engineer.

Allis-Chalmers Mfg. Co.—**C. R. Gibbs,** appointed director, service, Industries Group.

National Steel Corp.—**W. E. A. Best,** appointed asst. vice-president, sales, West Coast district sales office operations; **W. E. Burd,** manager, Pittsburgh sales office; **J. O. Bonar,** appointed asst. district sales manager, Pittsburgh office; **R. J. Heekin,** named asst. district sales manager, Cincinnati; **F. B. Hutton,** named asst. district sales manager, Cleveland, and **W. R. O'Brien,** appointed asst. district sales manager Indianapolis.

Jones & Laughlin Steel Corp., Research Div.—**Dr. Rolf Nordheim,** named senior research engineer, process metallurgy section.

General Electric Co. — **Harold Weiss,** appointed manager, applications engineering, Computer Dept., Phoenix, Ariz.

ACF Industries, Inc., American Car & Foundry Div.—**J. D. Loftis,** appointed director, marketing, and **A. F. Loveland,** appointed works manager, Berwick plant.

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PAYLOADER® Performance

BIG LOAD CAPACITY—The model H-25 PAYLOADER tractor-shovel has a carry capacity of 2,500 lbs.—carries more for its weight than any machine in its class.

MORE DIGGING POWER— Breakout force of 4,500 lbs. is available at the bucket cutting edge — more than on any other machine in its class. Exclusive power-transfer differential makes traction and "crowding" power more positive, especially in slippery conditions.

MORE MANEUVERABLE — Shortest turning radius (only 6 ft. at rear wheel hub) and power-steer make it possible to operate in closer quarters with greater speed and safety.

POWER-SHIFT TRANSMISSION — The model H-25 is the only machine in its class having a full-reversing power-shift transmission with two speed ranges forward *and* reverse — the low ranges for digging and close maneuvering, the high ranges for fast, economical travel. No "clutching" or gear-shifting.

LOWER MAINTENANCE — The boom and bucket mechanism is of rugged, simple design with fewer parts and linkages. Quality materials are used throughout, including anti-friction bearings at critical pivots.

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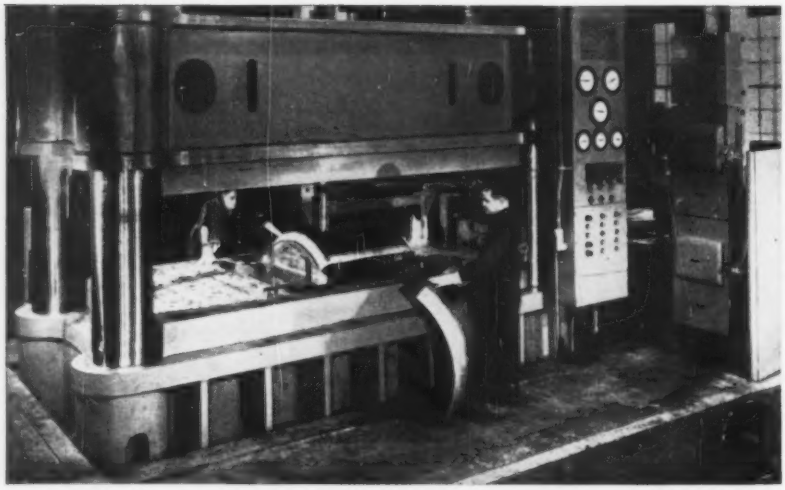


PREMIUM HYDRAULIC OILS CAN MORE THAN PAY BACK THEIR INITIAL EXTRA COST

Laboratory experiments, exhaustive field tests and, finally, general industrial experience have conclusively proved the long-term economy of a premium hydraulic oil over even the best straight mineral oil.

What makes a premium oil different? Straight mineral oil is a highly refined product containing many good lubricating qualities. However, it may be subject to fairly rapid oxidation, and it foams persistently when agitated.

On the other hand, a premium hydraulic oil, like Texaco Regal Oil R&O, contains a number of additives specifically designed to minimize or eliminate the undesirable qualities of straight mineral oil, while retaining the good.

Importance of these qualities in a hydraulic system. Oxidation, rust and foam all breed trouble in hydraulic sytems, even though they may not be immediately apparent. Because Regal Oil R&O is specifically inhibited to guard against these dangers, you can expect four distinct areas of savings, in spite of higher initial cost, when you install this premium oil in your hydraulic equipment:

It saves man-hours. Because a premimum hydraulic oil is inhibited against oxidation and rust, it will not form sludge in the system or allow parts to corrode. This can more than double the intervals between scheduled overhauls, saving valuable maintenance man-hours.

It prevents production losses. By keeping hydraulic systems clean, Regal Oil R&O guards against those sudden, unexpected stoppages that halt production, are costly to overcome. Pumps and other parts last much longer, too.

It cuts rejects when used in production equipment. Regal Oil R&O is inhibited against foaming. And foam, which causes jerky operation, can be a large factor in ruined machine parts.

It reduces oil drains. Because Regal Oil R&O lasts longer than straight mineral oil, systems don't have to be refilled nearly so often. The savings on this one factor alone are often enough to counterbalance the higher initial cost of Regal Oil R&O.

Way found to coat steel concrete forms without wasting oil

How to coat steel concrete forms without wasting a large amount of the oil in run-off has always been a problem for manufacturers of concrete products.

One of the country's leading concrete pipe producers has now licked this problem by using a 50-50 mixture of diesel fuel and Texaco Stazon. Originally developed as a non drip product for textile mills, this unique Texaco lubricant clings just as well to steel forms. The pipe manufacturer reports that run-off has now been eliminated completely. The new mixture can be used in temperatures as low as 0°F and can be either sprayed or painted on the forms.

MOVIE OF THE MONTH

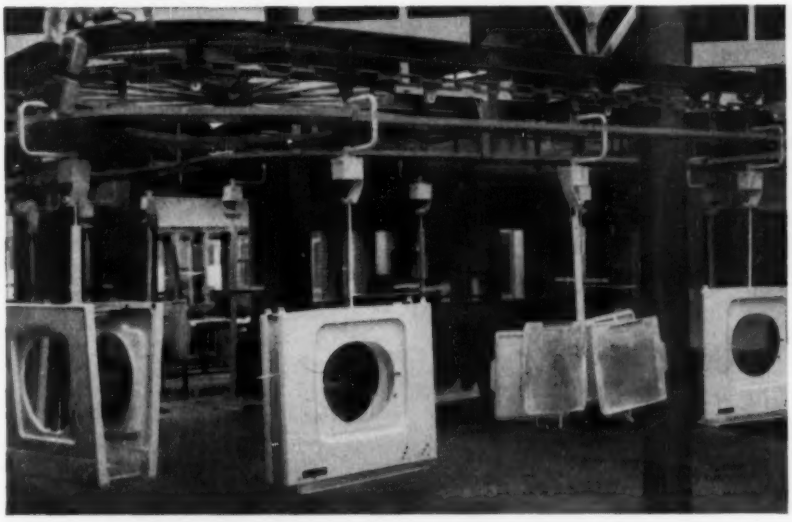
SEE...

"Shear Magic"

Texaco's new full-color film on the nature and uses of grease is a must-see feature for anyone interested in getting the most out of grease-lubricated equipment.

news

TEXACO REG. T.M.



How manufacturer eliminated rejects caused by flaking conveyor

Flakes of rust dropping from the plant-wide conveyor system onto newly painted finishes were causing an unhealthy 10% reject rate for one manufacturer of large household appliances. His problem: the conveyor traveled through areas where the humidity was high, as well as through baking ovens. These widely varying heat and moisture conditions were too much for the conveyor finish.

Texaco called in. Although the problem was not directly associated with lubrication, the visiting Texaco Lubrication Engineer heard about it and recommended having the conveyor sprayed with Texaco Rustproof Compound L. This versatile Texaco product withstood both the excessive humidity and the high temperatures that the conveyor encountered in its travels around the plant. Rusting ceased and rejects of the finished product dropped drastically from 10% to a normal 1½%.

New Seagram building gets cutting oil bath

In one of the most unusual uses for a petroleum product yet, the Seagram building, on New York's Park Avenue, recently employed Texaco Sultex Cutting Oil as a bath for its unique bronze facade. The reason: a dark "antique" surface on the metal was wanted, and the sulphur in Sultex reacted nicely with the bronze to give the desired effect of age!

NEW PRODUCT NEWS

New tool joint compound resists pressure used in joining pipes, and joints can be broken without using much more torque than was applied in making them up. Primarily for use in oil fields. Makes an excellent thread lubricant anywhere where cost is a big consideration.

Lube facts to be aired for metal-working plants

The story of many of the less common, "odds and ends" lubricants used in metalworking will be told in the July issue of "Lubrication" magazine. The editors plan to discuss roll oils (both ferrous and non-ferrous), lubricants for hot punching, deep press drawing, wire drawing and the like. To be sure you're on the list to get this important issue, mail coupon.

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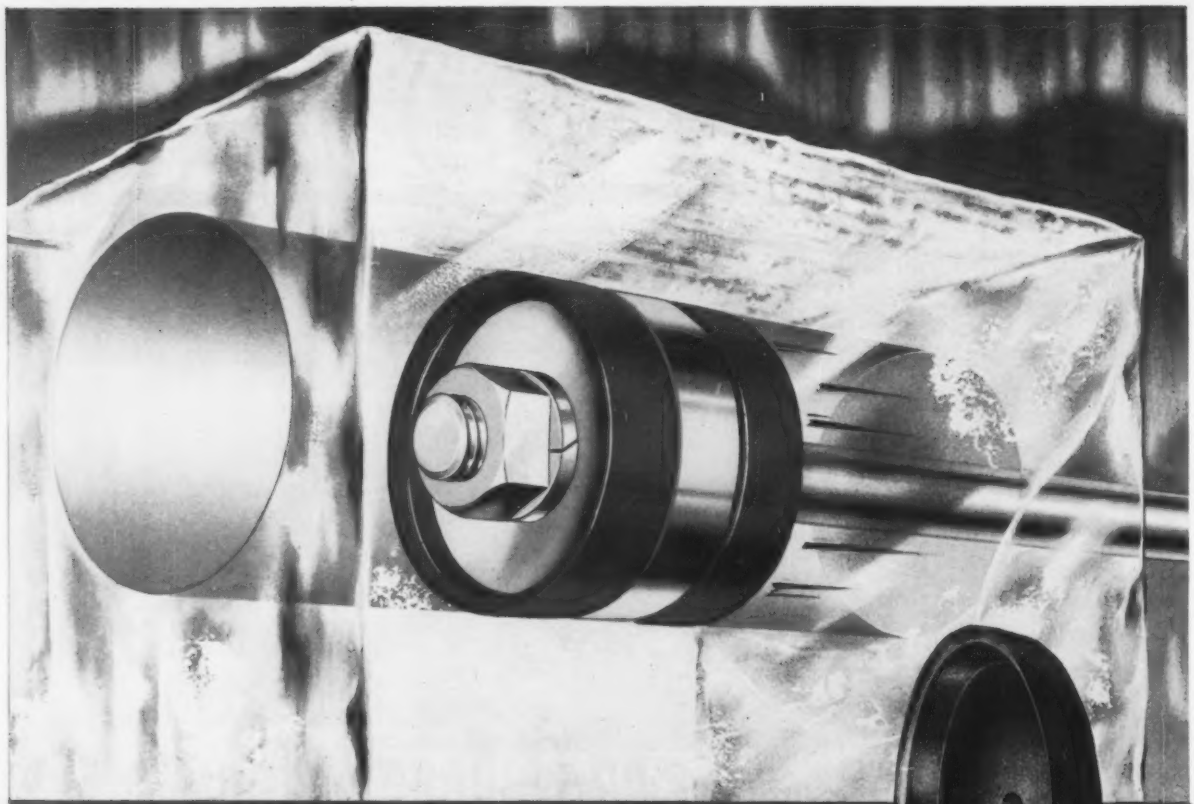

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Any time you face the problem of reducing cylinder cup breakaway or sliding friction, chattering or freezing, come see us. We're reasonably certain that Chicago Rawhide's Sirvis Leather K-400 cups can help you. Their specialty is easy sliding — particularly in vacuum cylinders at sub-zero temperatures and in pneumatic cylinders at ambient temperatures and low pressures. Tests show a 50% reduction in breakaway and sliding friction over standard leather cups at ambient temperatures . . . and these K-400 cups are functioning beautifully in applications at -30° F. In another test, C/R Sirvis K-400 cups were run well over one million cycles at 20" of vacuum with negligible leakage and wear.

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Plating Team Holds Down Cost In Tooling for Nose Cones

By G. H. Cook—Missile and Space Vehicle Dept., General Electric Co., Philadelphia, and L. P. Vollmuth—Bart Mfg. Corp., Belleville, N. J.

Missile development spells high quality for small lots.

Here's how teamwork pays off in setting up prototype plating line that can later handle quantity production.

▪ In the development stage of a missile program, it's most desirable to hold tooling costs to a bare minimum. But tooling also has to be able to handle a later boost in production without change in basic process.

A case in point is the nickel plating of nose cones for the Atlas and Thor missiles. The problem, faced by General Electric Missile and Space Vehicle Dept., serves as an excellent example of cost-conscious engineering.

Time was limited and left no room for error. With GE's policy of utilizing subcontractors for specialized work, a ready-made source had to be found to develop the needed facility.

Need Plating Skill — The Bart Mfg. Co. was chosen for the job. Together the General Electric-Bart team worked out tooling requirements.

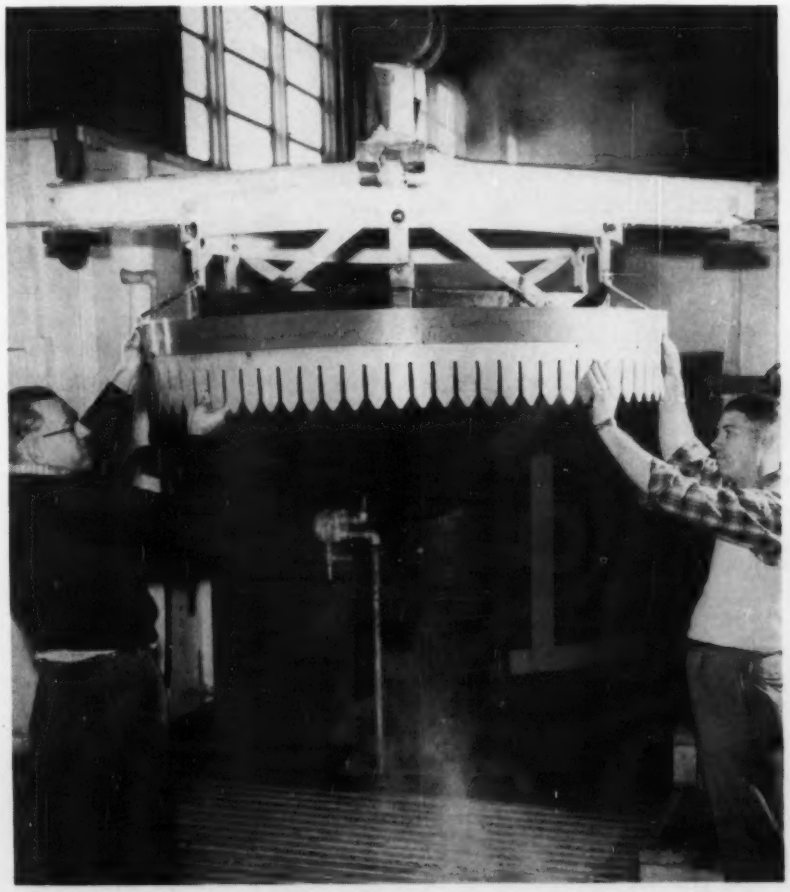
Some of the parts weighed over ½ ton and exceeded 5 ft in diameter. It was a critical handling job and an extreme challenge in electroplating skill.

All external surfaces were polished to an 8-12 rms micro-finish with waviness and contour held to near perfection. This smoothness and contour was transmitted to the nickel plated surface in thicknesses ranging to 0.040 in. The only truing allowed was polishing to restore the 8-12 rms micro-finish.

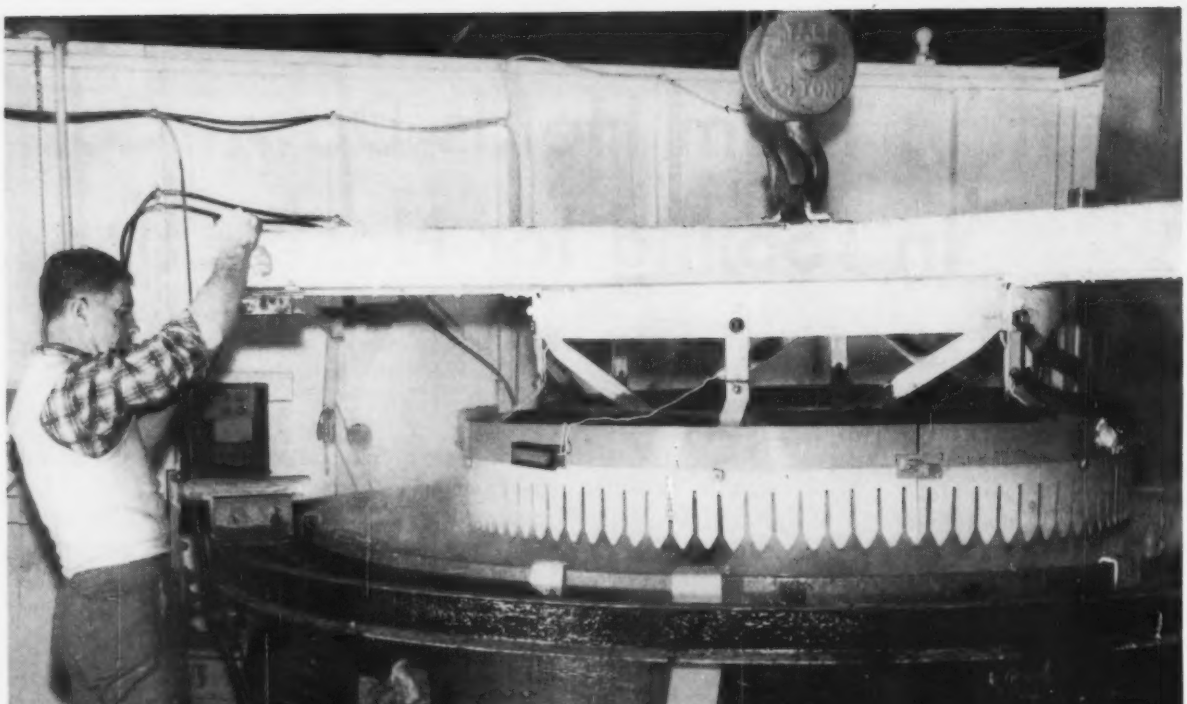
No Work After Plating—Plating to this accuracy eliminated post-plating machining or grinding to restore contour. This approach brought about considerable cost savings.

Plating thickness was controlled within ±0.001 in. on all external surfaces, including edges and radii. In addition, there was also close control of total weight of metal deposited.

These demands were made more



READY TO PLATE: Polished copper part is ready for plating as plastic plating shield is adjusted in place. Careful handling protects finish.



LOWER INTO PLACE: Operator guides contact points in place as part descends into nickel plating bath. Jumper lead insures that part enters with current on. Each contact point carries ⅓ of current.

difficult by the fact that the copper-base metal thickness varies throughout. Special instruments were developed for the job of measuring thickness to the desired accuracy.

To Stand Service—Missile flight conditions, plus the thermal effects of re-entry, demand the maximum in adhesion, ductility, density and uniformity. Even the remote possibility of base metal outgassing could not be neglected.

A post-plating bake was included to be safe. It also served as a non-destructive adhesion test.

A major factor effecting cost was whether or not it would be necessary to re-machine the part after plating. It's an operation that is difficult and costly.

The part would require re-alignment in order to refinish the nickel without destroying static balance, deposit thickness, or deposit uniformity requirements. If ground, a special grinding machine would be necessary to g r i n d compound curves.

Plate to Size—The decision was to plate to size if possible with conforming anodes to aid deposit uniformity.

A specially engineered solution agitation system evacuated gas formations and promoted smoothness. A unique plastic shield, resembling a plastic fence, solved the problem of edge buildup.

The setup proved efficient and easy to adjust. Simple variations in slot depth, picket length, or width ratio gave ample adjustment of current distribution.

Saves on Tooling—As a result of using research and development type tooling, actual costs ran only 40 pct of what a production-type facility would have cost. Tooling design is such that increased production can be handled. All production requirements have been met without difficulty.

The flexible setup allows for possible changes in shape or size. Several changes were made without complications.

To minimize special handling equipment, receiving and handling of parts was done in one position. Simple vertical lifts and straight-line travel eliminated all need for turnover.

Carry Nose Down—To prevent over-stressing the attachment points, special nose-down racks were designed. The setup evacuates trapped liquid prior to loss of buoyancy in removal from each bath.

To maintain a wet surface during transfer, a refrigerated (to 40°F) acid rinse retards drying. Also clear water is played on the external surfaces during transfer.

The team developed a salvage technique to reclaim rejects without destroying the fine finish of copper base metal. Key to the method is a special Ni-plex stripping bath developed in conjunction with Hampshire Chemical Co., Providence.

How to Measure?—The problem of test measurement was a real one. The base metal is non-magnetic and

its thickness varies throughout the cone.

The test instrument would have to read from 0.005 to 0.020 in. within ±4 pct accuracy and would have to be independent of base material thickness. Since no available equipment could meet these limits, GE's General Engineering Laboratories developed a unit.

It consists of an electromagnetic probe having a constant magnetizing force with alternating current to induce a secondary voltage in the pickup coil.

Induced voltage is proportional to plating thickness, and thickness is read directly on the unit's meter.

Old Method Checks—Prior work was done by passivating the part surface, then plating and physically removing the plated film for micrometer measurements. This method, though laborious, was effective and also served to prove the capability of the test instrument.

To prevent scratching highly polished external surfaces, parts were protected in jewelers felt during transit and storage. All handling movements were planned with extreme care.

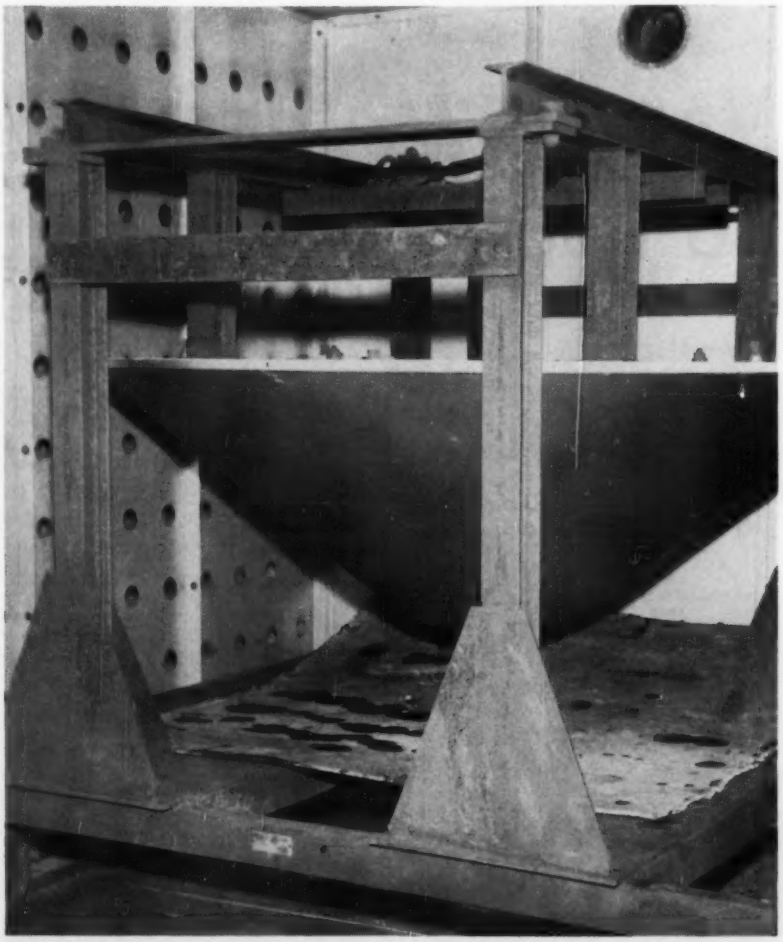
Nickel was chosen as the coating to help reduce heat absorbed by radiating hot gases during flight. It also prevents corrosion of the copper and protects against erosion by meteoric dust.

What Plating Bath?—In choosing the nickel plating bath, a test program investigated the various types, including sulfamate, all-chloride, watts and all sulfate solutions. The choice was given to the watts bath, with the all-chloride bath found unsuitable.

However, the watts bath required soluble anodes, so the initial plating was done with the all sulfate bath. It offered advantage of maintaining anode surface uniformity.

Later in the program, after the Atlas nose cone was proven, sufficient production was set up to encourage the use of the watts type bath. The method using soluble anodes resulted in only a slight increase in thickness variation.

CHECKS THICKNESS: Special meter measures from 0.005 to 0.020 in. within ±4 pct. accuracy. It works independently of base metal thickness.



BAKE TO BE SURE: A post-plating bake prevents chance of base metal out-gassing in service. It also serves as a nondestructive adhesion check.

DEGASSING CYCLE: It starts with pouring of 75,000 lb of molten steel at 3000°F into ladle. Ladle is lowered into vacuum chamber where steam ejectors do their work. Degassed metal is then poured.

Vacuum Method Works in Ladle To Boost Degassing of Steel

Aimed at producing steel to stand up to the toughest metalworking jobs, a new vacuum process speeds hydrogen removal.

It's a production setup that's not restricted to pouring into one mold at a time.

▪ A new vacuum process produces cleaner, tougher steel for die-blocks and forgings. Key to the setup is the degassing of the molten steel in the ladle on a regular production basis.

In its demonstration of the vacuum method last week, A. Finkl & Sons Co., Chicago, showed off the degassing cycle at its melt shop. Over 300 heats so far have been poured using the new method.

Efficient removal of hydrogen gas is the major benefit. Oxygen and nitrogen gases are also removed to improve steel quality.

Stress Multiple Pouring — The advantage to vacuum degassing of steel in the ladle is that the degassed steel can be poured into one or more molds. The ladle can be moved from one mold to another, an important feature of interest to foundries.

This contrasts with the stream-degassing method of hydrogen removal, where degassing takes place as the steel flows from the ladle. One of the limitations here is that the steel from the ladle is only poured into one mold.

For years, various heat treating methods have been used to reduce hydrogen content, but they're expensive and time consuming. Flaws often show up after weeks of labor in forging and machining to cause rejection of the part.

Into Vacuum Chamber—At the Finkl melt shop, the process starts with the pouring of a 75,000-lb batch of steel at about 3000°F from the electric furnace into a ladle. The ladle is then lowered into a large vacuum degassing chamber.

With the cover in place, the vacuum degassing cycle starts. Automatic controls turn on four steam-ejector suction pumps in proper sequence. As the air inside the chamber is drawn out, it creates a high-vacuum condition inside. As the vacuum builds up, microcrack-causing hydrogen gas in the steel bubbles to the top and is drawn out the chamber.

Oxygen and nitrogen gas also

bubble out. You can watch this turbulent boiling action take place inside the chamber by looking through the port holes with dark blue glasses.

Helium Boosts Action—The rolling turbulent action increases as helium gas is injected into the ladle to bring more steel to the surface. The helium serves as a scavenger to increase the vacuum removal of unwanted gases.

Test sheets show that the amount of hydrogen removed drops from an average of 3.9 ppm down to 1.5 ppm. That's the removal of about 60 pct of the hydrogen.

The vacuum degassing cycle in the ladle takes about 12 minutes. There's little loss in temperature of the steel.

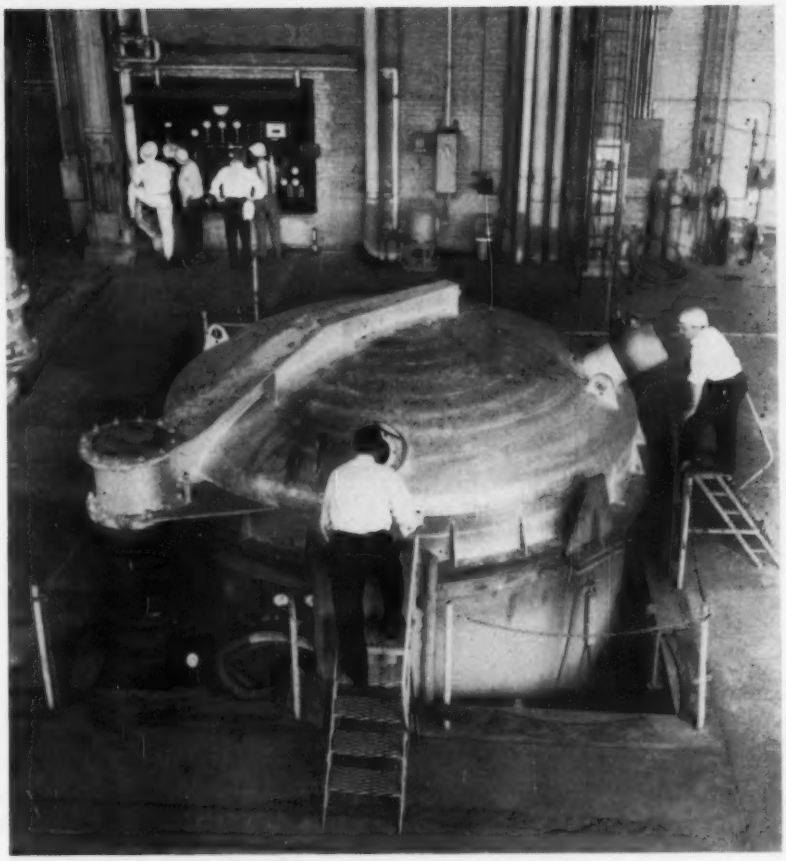
Use Lower Temperature—Production records reveal that the vacuum degassed steel is poured into the ingot molds at about 2850°F. The company also finds that the degassed steel can be poured at about 30° lower than non-degassed steel.

According to William Finkl, president, the new method of degassing high alloy steels in the ladle gets very pleasing results. He states, "It means our customers are going to get improved service life from our die-blocks and forgings, which add up to an important saving to our customers.

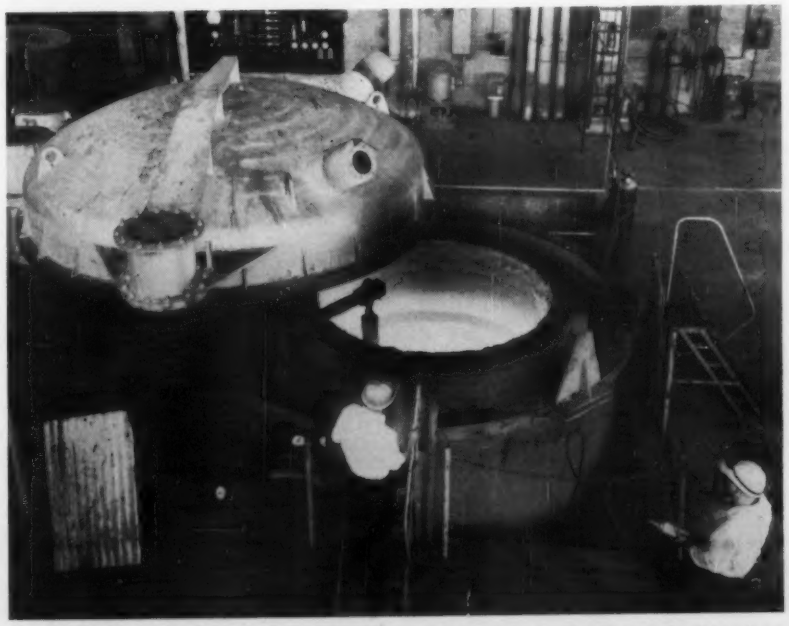
"Several major steel companies here and in Europe," he goes on to say, "have shown a great deal of interest in this new development we have been working on for two years and now have in production on a regular basis.

Claimed to Be First—"Insofar as we know, this is the first successful process of vacuum degassing of steel in the ladle in the industry in this country and Europe."

The man who played a major role in the development of the new ladle degassing setup is C. W. Finkl, vice president, engineering. The company now vacuum degasses 80 pct of its steel output. Degassing costs are less than 1¢ per lb.



VACUUM IN PROCESS: Inside the chamber, hydrogen, oxygen and nitrogen gases are bubbling to surface and being carried away by vacuum pumps. Injection of helium gas through ladle stopper rod boosts turbulence.



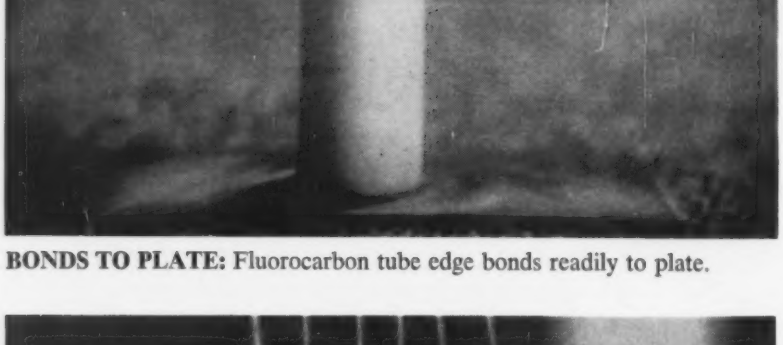
READY TO POUR: Surface of molten steel in the ladle is now quiet after 12-minute degassing cycle. Process reduced hydrogen content 60 pct.

Three-Step Method Bonds Fluorocarbons Firmly

Fluorocarbons always did have excellent properties, but this new bonding technique will widen their uses even more.

▪ Ever since fluorocarbons were first used in industry, there's been no successful, sure-fire method of bonding this family of plastics. It made no difference whether the surfaces were clean, as-molded or machined. None of the adhesives worked. They either failed right away or they failed during aging.

But now R. F. Plastics Co., Arlington, Mass., has developed a new process that, when used with suitable adhesives, helps bond these fluorocarbons reliably. Only three steps, the third one optional, make up this process, called Fluorocarbon Surface Preparation (F.S.P.).



BONDS TO PLATE: Fluorocarbon tube edge bonds readily to plate.

ELECTRONIC BONDING: Potted electronic component contains fluorocarbon wire coating with F.S.P. It's held firmly in polymerized resin.

Step-by-Step — The first step treats the surface with a vapor blast, This provides a good surface for proper bonding. But in this phase of the procedure only the areas to be bonded are prepared.

Next comes a washing and etching dip-tank setup. This step must be carried out in a controlled atmosphere to eliminate problems in temperature and etch-tank concentrations.

The third step is only used where storage and contamination problems exist before bonding. But it's very important when that's the case. It involves applying the high-temperature polymer coating to areas to be bonded.

Previous Problems—In the past, elastomer-type adhesives, with solvent base, and even some thermosetting adhesives of the phenolic-polyamide and phenolic - cyclized - rubber types, showed some promise on short-term evaluation. But whenever aging tests on these materials were stepped up, all of the bonds failed.

For the record, these earlier tests were made on double lap shear test specimens, each one cycled 20 times from 70° to 300°F. All the failures took place at less than 50 psi under shear loading.

Which Test? — Much thought went into the best test procedure to evaluate the F.S.P. process. R.F. Plastics engineers first considered a typical peel test. But they were sure that the adhesive traits would simply cloud the real performance data. After all, they were out to determine the actual strength of F.S.P. to the fluorocarbon.

They did find out that you get

better peel strengths from an elastomeric-type resin than from a rigid-type resin by distributing loadings over larger areas. At any rate, the peel test of the F.S.P. process was ruled out.

The men at the lab finally chose a double lap shear test. Here each specimen could be taken to failure with a true measure of the F.S.P. shear strength.

Studies the Matter—R.F. Plastics then decided on three fairly common metals, stainless steel, aluminum, and chemically cleaned and irridited magnesium, for the test. It also chose a series of adhesives previously developed for bonding to these metals.

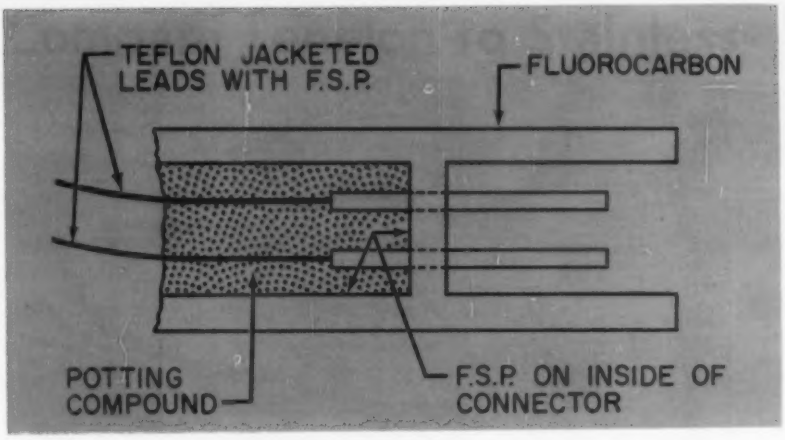
It then prepared 100 test specimens as per ASTM specification for double lap shear tests. The table shows the results of these tests. Bear in mind that each value in the table is an average of ten specimens.

It's interesting to note what happened when 20 additional samples, each one F.S.P.-treated, were put through accelerated aging. Cycled between —30° and 300°F for 100 cycles, they resulted in values very close to non-cycled values.

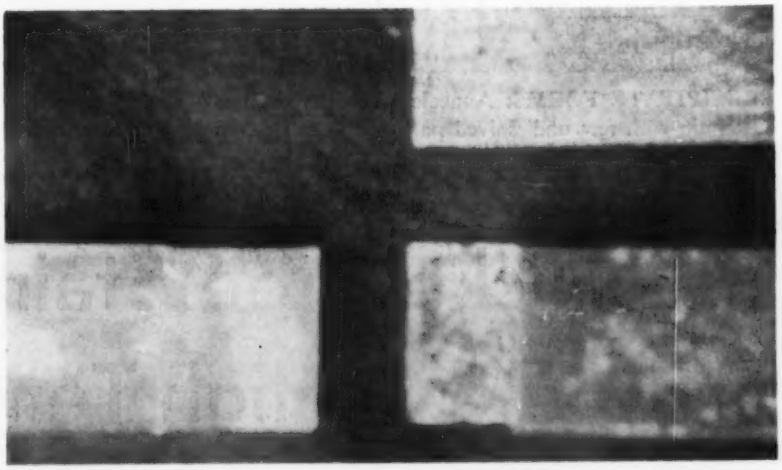
Their Future—One of the chief advantages of fluorocarbons is their low coefficients of friction. But now the inexpensive bonding of these films creates even broader avenues of practical use. These areas include sliding adjustment equipment, ejector tracks, runners, stacking or laminating of packing for high strengths, and bonding of sheets or films to line corrosive ducts or tanks.

Also, fluorocarbons great resistance to moisture should improve this area as well. Thanks to the F.S.P. process, it's now possible to bond thin copper films right on top of thin fluorocarbon films and to come up with some very flexible printed circuit boards.

In all, this latest step forward in plastic bonding should be of useful value to such industries as aircraft, missiles and electronics, to mention only a few.



SEALS OUT MOISTURE: By treating both wire and connector with F.S.P., you can provide excellent moisture seal.

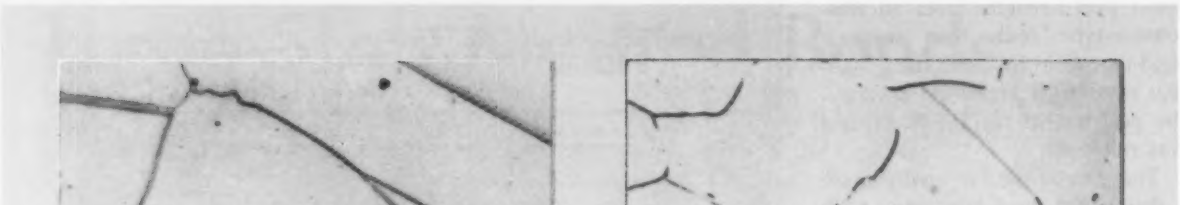


GOOD SHEAR RESULTS: Test results in all cases on stainless steel, magnesium and aluminum showed failure of F.S.P. from the fluorocarbon. These were double lap shear tests, preferred in this case over peel tests.

How Bonds Hold in Shear

Fluorocarbon	Metal	Metal Surface Preparation	*Adhesive	Ultimate Shear Strength at 275°F, psi
Teflon	Stainless Steel	HF etch	23-303	980
	Magnesium	Chemically cleaned	23-301	810
	Magnesium	Irridited	23-302	790
	Aluminum	Chemically cleaned	23-304	840
Kel-F	Stainless Steel	HF etch	23-303	850
	Magnesium	Chemically cleaned	23-301	795
	Magnesium	Irridited	23-302	825
	Aluminum	Chemically cleaned	23-304	800

* R. F. Plastics Co. formulations.



PRECIPITATE FORMS: Annealed Tenelon (left) is austenitic with few undissolved particles. Precipitation occurs at grain boundaries (right) after long-time creep-rupture testing at 900°F. Mag.: 1000X

Can Nickel-Free Stainless Compete at High Temperatures?

By R. R. Brady and D. T. Boughner—U. S. Steel Corp., Pittsburgh

Room temperature strengths of nickel-free stainless are well known.

Now, recent tests indicate that it can compete with 18-8 types at high temperatures.

■ During the nickel shortage several years ago, steel producers studied the possibilities of replacing nickel in austenitic stainless steels, the 18 pct Cr, 8 pct Ni types.

This can be done with other austenite stabilizers such as manganese and nitrogen and still not get a loss in physical properties.

Research was successful in that two high-manganese, low-nickel alloys were accepted as standard steels AISI Types 201 and 202.

Almost No Nickel—Tenelon, developed by U. S. Steel's South Works went a step further. This high-manganese, high-nitrogen austenitic stainless steel contains almost no nickel. The nominal composition is 18 pct Cr, 15 pct Mn, and 0.50 pct N.

Moreover, the yield strength of annealed sheet Tenelon at room temperature is 77,000 psi, twice that of such 18-8 type stainless steels as Types 304, 316, 321, and 347. Its tensile strength of 130,000 psi is one and one-half times that of the same steels at room temperature as shown in the table on the right.

But how does Tenelon hold up at elevated temperatures? Will these increased tensile properties fall off when Tenelon is used for long

Analysis of Tenelon

Composition:	C	Mn	Ni	Cr	N
Pct	0.096	14.93	0.47	18.06	0.46

times under high-temperature conditions?

At High Temperatures—Recent tests results show that U. S. Steel's nickel-free stainless can be used at temperatures ranging from 900°-1350°F in place of several 18-8 type stainless steels now being used.

For example, at 900°, 1050°, 1200°, and 1350°F, the 1000 hour rupture strengths of Tenelon stainless—68,000 psi, 41,000 psi, 28,000 psi, and 12,100 psi respectively—are about the same as those of Types 316 and 347 at the same temperatures, and are much higher than those of Types 304 and 321.

This data and creep-rupture strengths for 10,000 hours are given in the table on the next page.

The Tenelon used in the tests was supplied in the form of ¾ in. diam bars that had been forged from a billet from a 40-ton commercial electric-furance heat.

High Nitrogen—The high-nitrogen content was obtained by adding high-nitrogen ferro-chromium and high-nitrogen ferro-manganese to the heat.

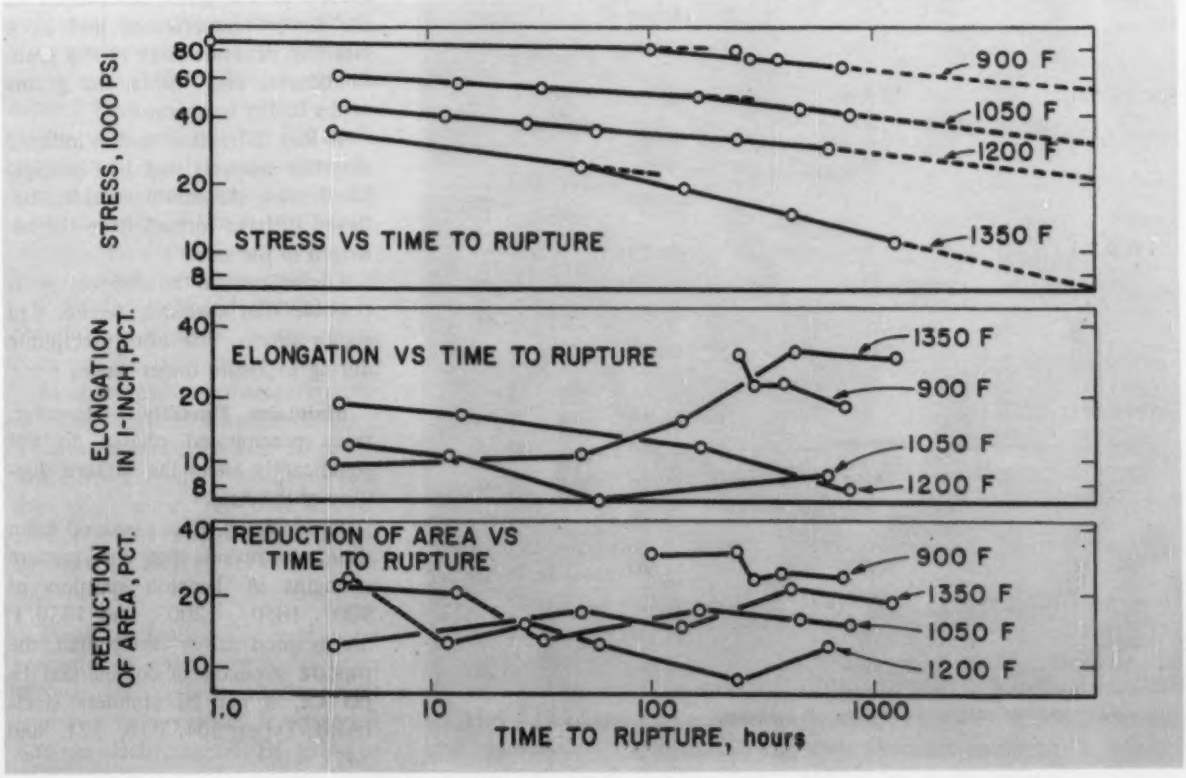
Creep-rupture tests were made on 0.252 in. diam specimens machined from these bars after they had been heated for 1 hour at 2000°F and then water-quenched.

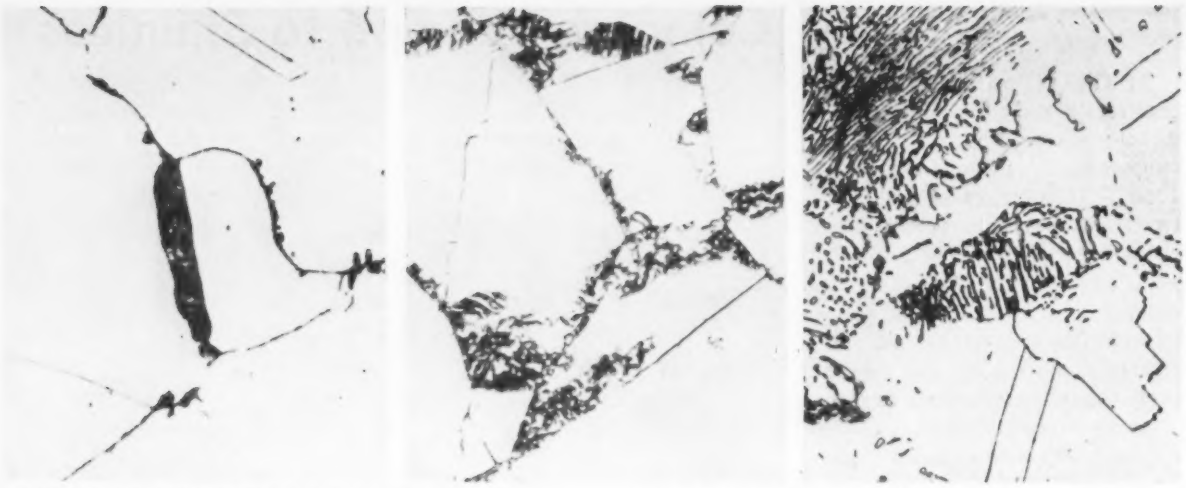
In addition, Magnegage measurements to determine the amount of ferrite in the steel, Vickers hardness measurements, and metallographic studies were made on the steel be-

Compare Tenelon to Stainless

STEEL	Yield Strength (0.2 pct Offset), psi	Tensile Strength, psi	Elongation in 1 in., pct	Reduction of Area, pct
Tenelon Stainless	77,000	130,000	63	73
TYPE 304	34,000	85,000	63	76
TYPE 316	38,500	85,500	60	77
TYPE 321	33,000	85,000	49	75
TYPE 347	39,500	91,000	50	71

Test Results on Nickel-Free Stainless





LAMELLAR GROWTH: After long-time creep-rupture testing at 1050°, 1200°, and 1350°F, lamellar phase at grain boundary (left) becomes resolved (ctr) and is within grain boundary (right). Mag.: 1000X.

Creep-Rupture Properties

Tenelon Vies at 900°-1350°F

STEEL	TEMPERATURE, °F	STRESS, PSI FOR RUPTURE IN 1000 HR	10,000 HR*
TENELON STAINLESS	900	68,000	56,000
	1050	41,000	31,000
	1200	28,000	21,000
	1350	12,100	7,000
TYPE 304	900	49,000	38,000
	1050	27,000	20,500
	1200	14,000	10,500
	1350	7,600	5,500
TYPE 316	900	67,000	**
	1050	40,200	32,000
	1200	23,000	16,300
	1350	12,300	9,200
TYPE 321	900	48,500	43,000
	1050	32,000	27,000
	1200	18,000	13,000
	1350	8,000	4,600
TYPE 347	900	56,000	54,000
	1050	40,000	37,000
	1200	25,000	22,000
	1350	12,000	7,200

* Extrapolated data. ** Data not available.

fore and after long-time creep-rupture testing.

Exposed Under Stress—The results of these tests show annealed Tenelon to be entirely austenitic except for a few very small undissolved carbides and/or nitrides. However, during exposure under stress at 900°, 1050°, 1200°, and 1350°F, additional precipitation occurred at the grain boundaries at the lower temperatures and as a lamellar structure both at the grain boundaries and within the grains at the higher temperatures.

X-Ray diffraction studies indicate that the material that had precipitated was chromium nitride, believed to have formed from the nitrogen in the steel.

Under certain conditions, it is possible that carbides, ferrite, and sigma phase will also precipitate during exposure under stress.

Maintains Ductility — However, these precipitated phases do not significantly affect the rupture ductility of the steel.

In summary, data obtained from the tests reveal that the rupture strengths of Tenelon stainless at 900°, 1050°, 1200°, and 1350°F are as good as, or better than, the rupture strengths of commercial 18 pct Cr, 8 pct Ni stainless steels (AISI Types 304, 316, 321, and 347).

X-Ray Signals Thickness Limits

In-process gaging not only saves time, but assures the customer of accuracy in every bit of material he orders.

An X-ray gage does this without contacting the strip surface —thus, there's no wear.

▪ The key word to the success of any warehouse is service. Customers, both large and small, rely on warehouses to deliver the right items promptly. So anything a warehouse can do to insure accuracy and still speed shipments is a big step in the right direction.

One company, Coil Steel Corp., Cleveland, did both by installing a non-contact radiation gage to measure de-coiled and custom-slitted coil and sheet. It now shows a 30 pct improvement in production.

Aids Slitter—Known as XactRay, the X-ray device is made by Weston Instruments Div., Daystrom, Inc. In the Cleveland warehouse, it sits right next to a Wean slitter, aiding it in gaging tolerances. It also pregages coils before they're slit on other lines.

The gage replaces the old hand micrometer, surely an accurate device in some ways, but it never did learn to measure the crown effects on coils, produced during mill rolling. At Coil Steel, the new X-ray unit handles steel and aluminum in 50 different varieties. Some of the coils are 54 in. wide.

Most warehouse customers order in small lots and all sorts of sizes. Tolerances range from ± 10 pct to just a few percent. That means that the gage must be able to record accurate and clear readings, whether the increments be 0.005 or 0.00004 in.

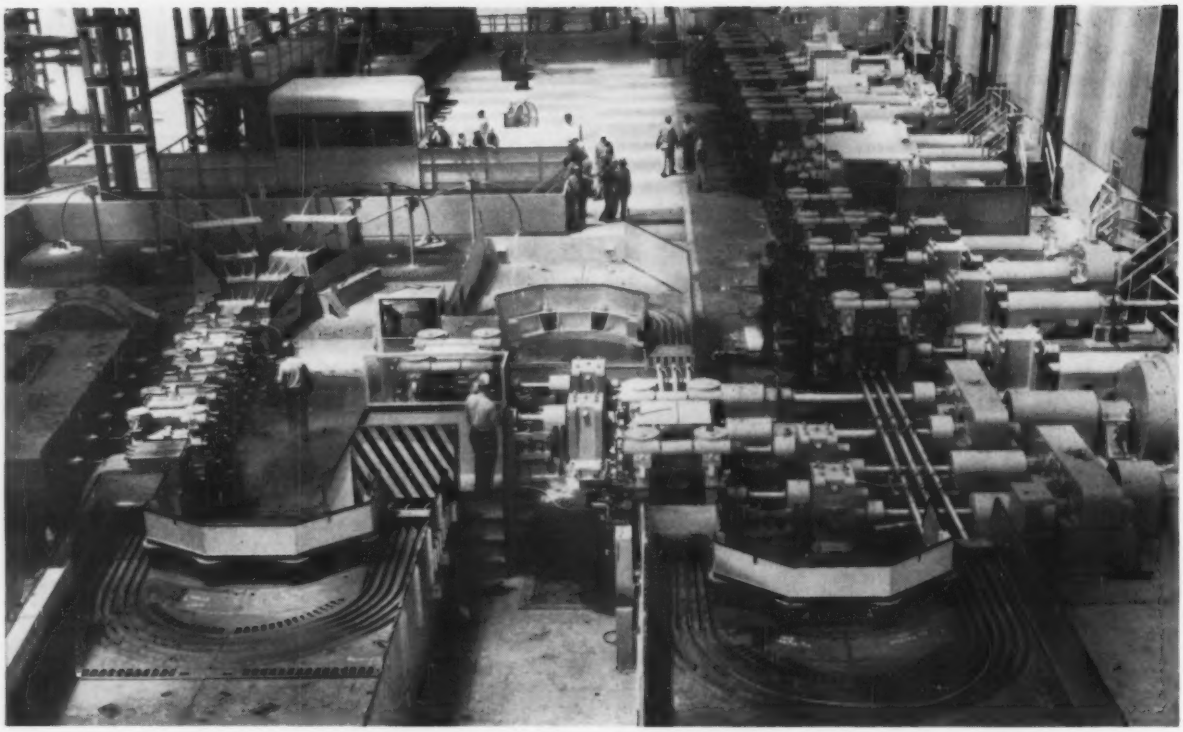
Passes a Beam—The instrument measures by passing an X-ray beam through the coil. A receiver unit transmits energy which is converted into an electric signal. By going to the unit's console you can see thickness measurements on the indicator and, at the same time, on the chart.

The gage scans the entire width and length of the unslit coil and also indicates the thickness of the whole area. In effect, it gives continuous side-to-side and end-to-end measurements in speeds up to 6000 fpm.

Before each run, the nominal gage is centered on the indicator by the slitter operator. Of course, every plus or minus deviation shows up on the indicator. The alarm signals go off whenever tolerances are exceeded.

Cuts Maintenance — Since the gage has no moving parts and makes no physical contacts, maintenance care is almost nil. All that's needed are regular check-ups on electrical contacts and occasional tube replacements. The X-ray tube lasts a long time, mainly because it generates with very little radiation.

READS ACCURATELY: Traversing carriage or receiving unit gages sheet steel before it enters slitter. Console gives tolerance readings.



FAST CYCLE: Billets start at upper right, pass through successive mills, thence to reels (left) as finished rod.

New Rod Mill Steps Up Output With High-Speed Twist Guides

A new rod mill setup provides the chance to put into practice many modern design features.

The mill's expected to more than triple this plant's prior rod production figures.

• After five years of planning and construction, a new 10-in. rod mill began operation recently. The 23-stand, three-strand unit turns out finished rods for reinforcing and wire rope.

Early estimates indicate the new mill will more than triple rod production at the Kansas City plant of Sheffield Div., Armco Steel Corp. The setup, designed and built by

HOT START: Billet leaves two-zone Rust billet reheating furnace and passes into roughing mill, first step in passing through 23 stands.

Morgan Construction Co., Worcester, is claimed to be the fastest 10-in. mill yet built.

Start with Billets — The mill's cycle begins with billets, 1000-1800 lb, 40 ft long, 2¾ to 3⅜ in. square. Reheated to 2100°F rolling temperature, the billets are pushed into a three-strand switching device to begin their journey through the closed-top housing setup.

It's made up of four multi-stand mills: the roughing mill, intermediate mill, looping mill with its three repeaters, and six-stand rod finishing train.

From the finishing train, rods pass through a four-stage high-pressure water descaler to insure high quality. Then they travel at speeds up to 6500 fpm in delivery to reels. The reels each coil 1000-1800 lb of rod.

Guides for High Speed—Roller twist guides, designed for the mill by Morgan Construction Co., make the high speed possible. These guides, set at 45°, automatically twist rods after they pass through stands 1, 3 and 5 in the rod finishing train. The units also hold scratching of the rods to a minimum.

A pet headache in rod mills, the cobble or runaway rod, has been put in its place at Sheffield. Under the new setup, if a rod fails to complete its journey through the finishing stands, photoelectric equipment starts automatic operation of the crop and cobble shears.

The shears chop the cobbled rod into short lengths for easy handling. Cold ends of bars are also automatically cropped after the bars pass through the intermediate mill.

Main drives for the mill total 11,500 hp. While not all of this power is now being used, the reserve will be needed later when facilities are expanded to include rolling of skelp and merchant bars and shapes.

General contractor for the setup is Rust Engineering Co., Pittsburgh. Westinghouse Electric Corp., Pittsburgh, supplied the mill electrical equipment.

CONTROLS SPEED: Operator sets the speed of each of the mill's 23 stands with amplifier equipment that controls speed to within 0.25 pct.

LAYING MADE EASY: Laying reels coil rod at speeds up to 6500 fpm. Each coil weighs up to 1000 lb. From reels, coils are pushed to conveyor. Then they're upended onto a hook carrier for 1760-ft trip to wire mill.

Cast Rolls Brave Higher Heats

Here's an alloy to take those high temperatures in roller-hearth furnaces.

These rolls have been on the job for three years.

▪ Research did it again. This time it solved a wear problem by developing a casting tough enough to resist the high temperatures of the newer alloys. Built to last longer, these rolls slash downtime.

The set of rolls now in use at the Westinghouse Metals Plant in Blairsville, Pa., has lived with steady heats above 2000°F for better than three years. Yet to be replaced, the original rolls are still hard at work.

Zone Heating—The furnace itself is a continuous roller-hearth type used to zone heat a very critical group of high-temperature alloys.

The Blairsville setup opened its doors back in 1955. Its purpose—to research into new metals and processes under proved working conditions. Much of the plant's time is spent studying wrought alloys and molded-metal products.

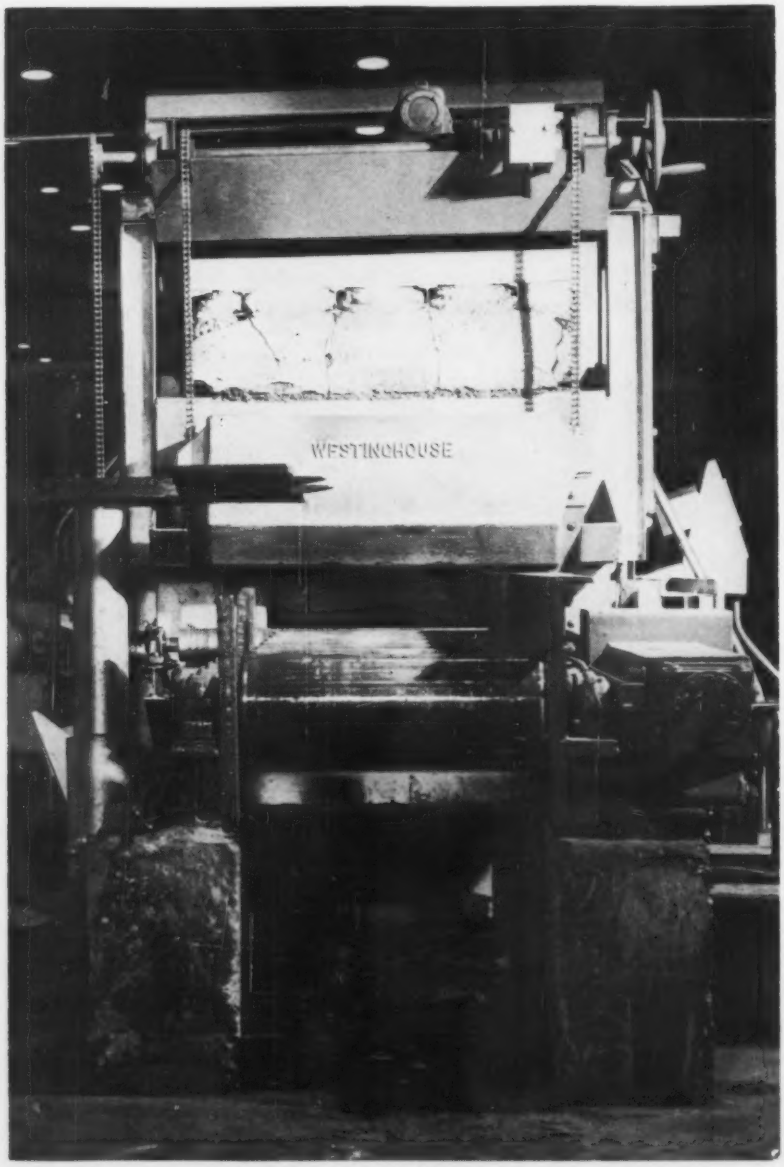
The heavy-duty rolls in use were centrifugally cast by Blaw-Knox Co. at its National Alloy Division in Blawnox, Pa. Cast from an alloy called 22H, the rolls rely on their traits to possess high strengths at elevated temperatures and to resist oxidation. They also hold their shapes under load.

Better Service — A product of National Alloy's research, the alloy met with success in many uses involving high temperatures. Life service of parts increased by 5 to 24 times over former methods. It was also found that the alloy improved heat resistance by 200°F over such standard grades as 35-15, 25-12 and 25-20.

Since installing the 10-in. diam rolls in the Westinghouse furnace, zirconium and titanium, as well as Kovar, Hipernik, Hipernom and Refractoloy, are now processed. Although built to withstand 2250°F, temperatures have not gone beyond the 2150°F point.

Heavy Work—All alloys entering the heating element have been produced by induction melting. Forged from cast ingots, some weighing as much as 1000 lb, the slabs go through a zone heating process. They are then sent over to a 24-in. mill for hot rolling.

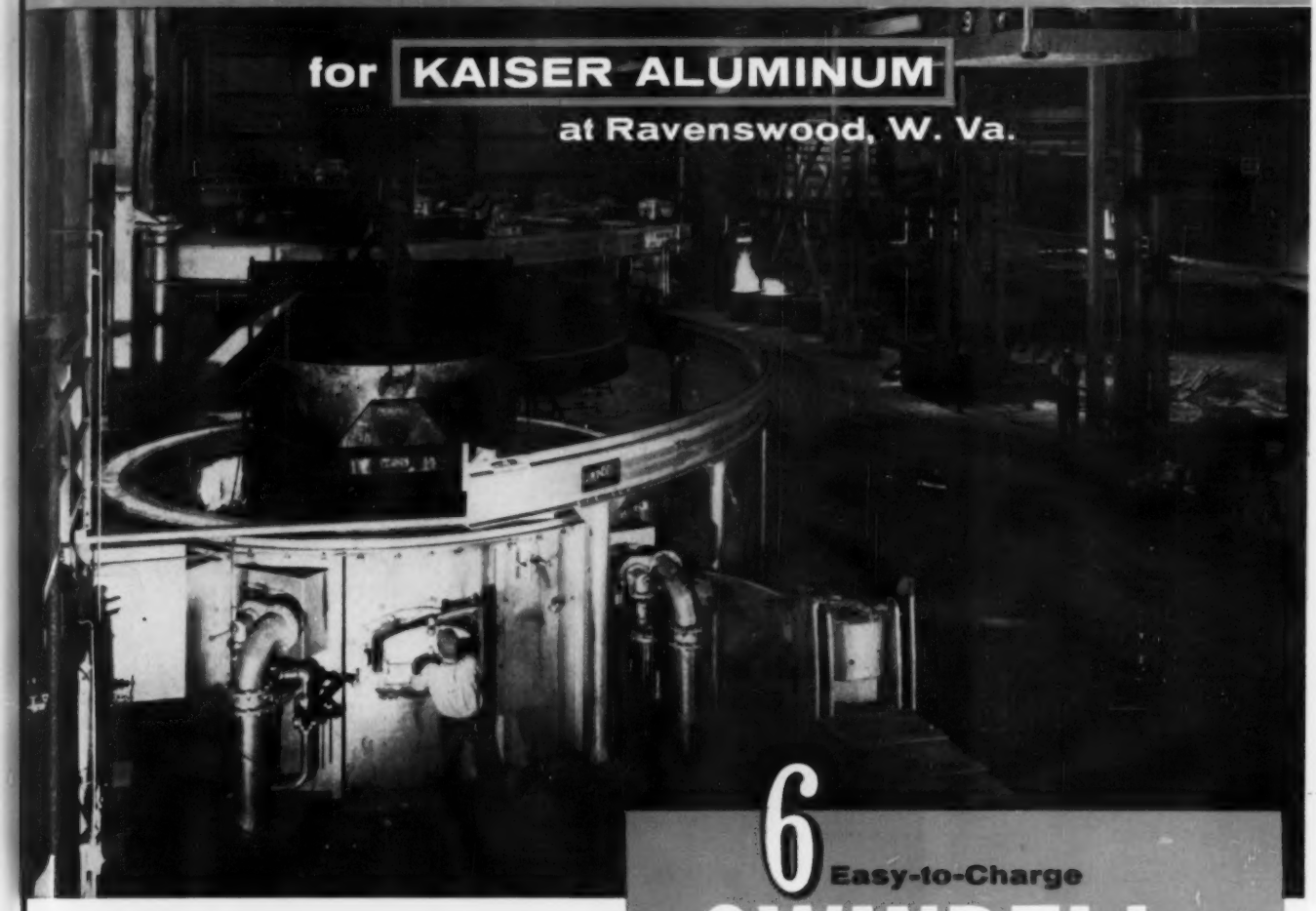
Westinghouse's roller-hearth furnace is 43 ft long and 28 in. wide. Air-gas fired, its slab heating capacity ranges from 70 to 200 fpm. Gas capacity is 3720 cu ft per hour, amounting to 3,900,000 Btu per hour in heat.



HIGH TEMPERATURES: Roller-hearth furnace processes slabs back and forth through four heating zones, exposed to 2150°F temperatures.

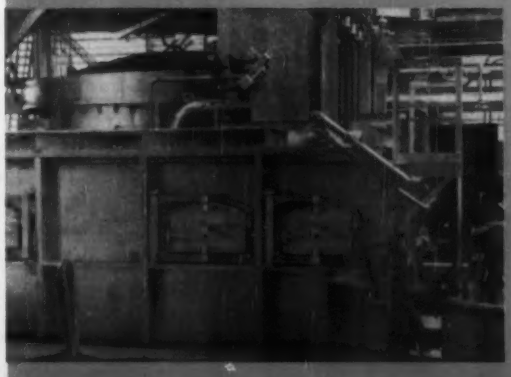
FIRST of their kind!

for KAISER ALUMINUM at Ravenswood, W. Va.



6 Easy-to-Charge SWINDELL CIRCULAR MELTING FURNACES

with removable lift-and-swing roofs



A long step forward in ease and practicality of charging is represented in these new Swindell-designed and erected circular aluminum melting furnaces. Equipped with lift-and-swing removable roofs for top charging by bucket, each gas-fired furnace has a capacity of 60,000 lbs and melts aluminum scrap at the rate of 10,000 lbs per hour.

...and also

6 RECTANGULAR HOLDING FURNACES

—capacity 35,000 pounds apiece

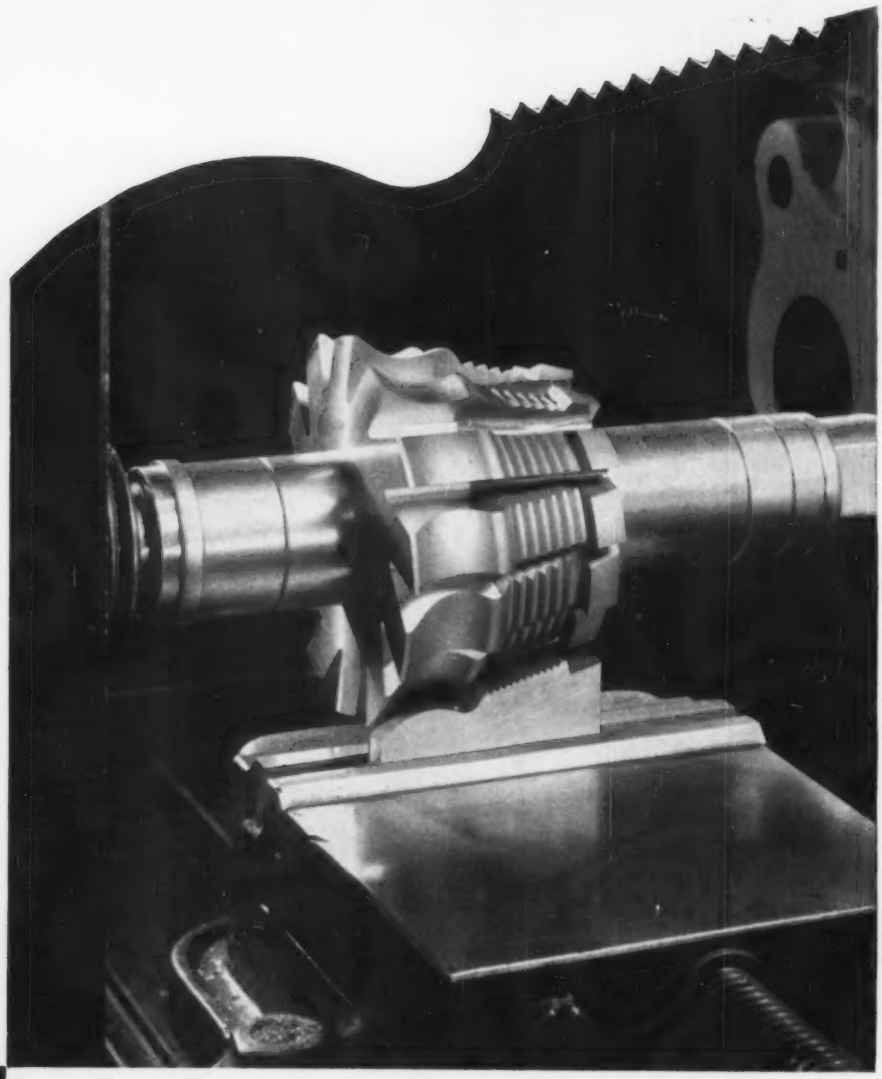
In conjunction with Kaiser Aluminum's new melting furnaces, the installation at Ravenswood also includes six new Swindell 35,000 lb rectangular holding furnaces.

● For any aluminum melting shop or heat treating requirement, consult Swindell-Dressler. Your inquiries are cordially welcome.

SWINDELL-DRESSLER *Corporation*

DESIGNERS AND BUILDERS OF MODERN INDUSTRIAL FURNACES

PITTSBURGH 30, PA.



Cutters with built-in Efficiency and Accuracy

This is an example of how efficiency and accuracy can be designed right into the cutting tool. The manufacturing and engineering capabilities of Barber-Colman Company can be added to your own in finding better solutions to milling problems.

The form shown at the left of the part is milled at the same time the multiple serrations are cut. Milling sharp points on the serrations is made possible by the alternate tooth design (see photo, above). The cutter is shown milling a sample which is later projected against an enlarged layout of the part to assure that the cutter will produce within specified tolerances. But, some of the most important quality features of this cutter are not visible to the naked eye.

Unground form . . .

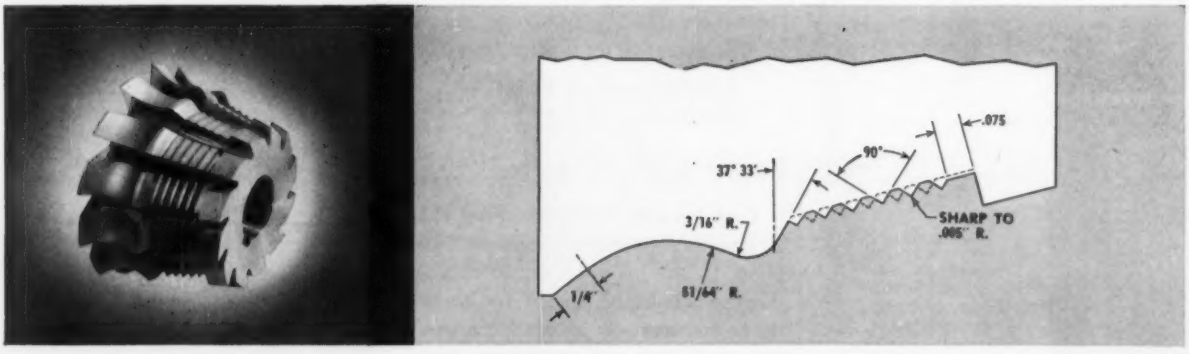
Ability to combine complex tool geometry and accuracy in this cutter without form grinding reduces original cost. In addition to greater accuracy, you get longer tool life from a cutter that is metallurgically as well as geometrically well formed. Barber-Colman's individual processing in the most modern metallurgical lab and heat-treating department assures highest quality which can be tested by the number of high-quality parts manufactured for every dollar of cost.

Sharpening economies . . .

Additional savings result from Barber-Colman's exclusive design and manufacturing techniques. For example,

Mill Odd Shapes in One Operation

...with Barber-Colman Form-Relieved Cutters



the smooth finish on the tops and sides of the teeth eliminates rough edges — a common cause of breakdown on the flanks. Faces are index-sharpened, permitting the important economy of *automatic resharpening*. Your sharpening guide or an automatic sharpener will maintain original accuracy throughout the life of the cutter.

These economies reduce the most important elements of tool cost: the cost of scrap and rework, cost of sharpening, cost of downtime for tool changes, and cost of tool depreciation.

Five types of engineering...

You get more than a cutting tool when you buy "Barber-Colman." You get five types of specialized engineering that reduce your costs and upgrade your quality:

1. *Application engineering* — on-the-spot evaluation of milling problems by experienced tool designers.
2. *Design engineering* — highly specialized tool engineering, backed by electronic computer facilities for fast, accurate calculation of complex forms.
3. *Metallurgical engineering* — specially selected steels and heat treatment for your particular material and tool geometry.
4. *Manufacturing* — the most complete and advanced processes under one roof for producing exactly the right finish, highest accuracy, and *any* cutter style.
5. *Quality control* — optical master inspection, seven different control stations, and numerous separate inspections for individual cutters.

Whether you want to combine operations, change processes, or just get more out of your tooling dollar, you can have a Barber-Colman field engineer at your desk for consultation by just calling Rockford — TR 7-5741.

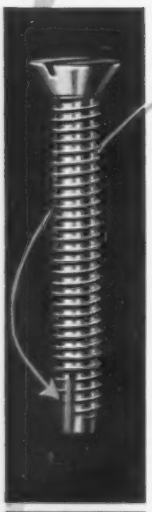
Barber-Colman Company

BARBER COLMAN

810 Loomis Street, Rockford, Illinois

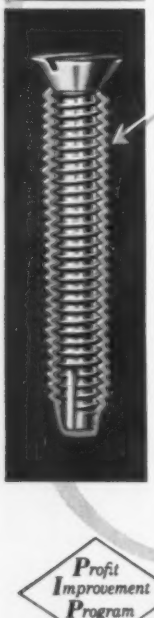
HOW

to know you're getting the quality you want



Look here

for sharp cutting edge and proper positioning of cutting slots in thread-cutting fasteners. Poor slots cost you money in replacing fasteners and damaged products . . . and the money comes out of profits. At American you get the combination of the best equipment and constant attention that gives you the quality you want.



Look here

for the well-defined threads you must have on thread-cutting fasteners. Without them, your fasteners don't follow the cut accurately, won't tighten . . . and it costs you money out of profits to replace them. At American, the best equipment and constant inspection maintain this mark of quality.

Profit Improvement Program

Quality fasteners cost more to produce . . . improve your profits when used!

Buy here

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You Arbitrate It!

DEATH IN THE FAMILY

From the files of
The American Arbitration Association

▪ One day last November, Fred H., a gear cutter in a machine-tool plant, called his foreman to report that he would be absent for three days because of a death in his family. In line with the union contract and past practice, three days' leave was granted, for which Fred was expecting to receive his full pay.

But a few hours later, an unauthorized walkout took place in the shop, halting operation for a week. Under the circumstances, management refused to pay Fred for those three days. **"The collective bargaining agreement provides for three days' pay only when absence from work is caused solely by death in the family,"** the superintendent said. **"You didn't lose any money by your absence to attend the funeral because the strike would have prevented you from working anyway. Maybe you're entitled to a few hour's pay to the time the strike began, but that's all."**

Eventually, the case went to arbitration under the Rules of the American Arbitration Assn. **How would you rule?**

The Arbitrator Ruled:

He said that if the death had occurred after the strike began, Fred would have been absent because of the strike, not the death, and he would not have been entitled to pay. Actually, he was absent because of the death in his family when the strike started. That determined his status for the next three days and he was given the full three days' pay.

CAUTION: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony, and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

AIRBORNE *TACAN* DEMANDS THAT PARTS LIKE THIS FIT PERFECTLY, EVERY TIME

. . . and here's how ITT's Standards Lab makes sure they do

This heater and cathode contact ring assembly is used with a lighthouse-type electron tube in the airborne unit of TACAN, a military and commercial aerial navigation system.

As in all TACAN components, this mating part must be readily *interchangeable* in case of component failure. So Federal Telephone and Radio Company, a Division of International Telephone and Telegraph Corporation, turned to their Standards Laboratory *before* starting production.

The heater and cathode contact ring was *optically* inspected—on a Kodak Model 30 Contour Projector. After analyzing the results, minor changes in tooling were suggested. Result: a perfectly matched part, completely concentric and interchangeable.

Whatever you're inspecting . . . Whether it's tools, gages, dies, electrical or mechanical components, the Kodak Model 30 Contour Projector provides you with a projected image that's as *free* from distortion as the science of optics will permit . . . *accuracy* across the entire face of the big, 30-inch screen. Images are sharp, high-contrast; erect and unreversed at all magnifications. Changes in magnification can be made at the flick of a switch.

More refinements . . . You also get efficient head-on surface illumination and a full 16″ throat clearance between collimator lens and front mirror. This clearance is constant at all magnifications, permits staging of large parts without repositioning.

The many other advanced refinements, extreme optical stability, and rugged construction of the Model 30 Kodak Contour Projector make it a leading choice for large-screen precision micrometry or routine gaging.

Cut inspection costs . . . Along with accuracy, optical gaging with Kodak Contour Projectors offers you savings in gage costs, increased inspection rates, and the economies that result from a minimum of operator training. You can use optical gaging almost anywhere in your plant . . . receiving, assembly, production, inspection, toolroom. There are 6 Kodak Contour Projectors to choose from, one matched to your inspection needs. Get all the facts by writing for our detailed catalog.

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Kodak
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New Catalogues and Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 105.

Cement Gun

A 42-page bulletin describes the characteristics and operation of a machine operated by compressed air, called a "Cement Gun," which mixes sand and concrete plus water and pumps the mixture under pressure, for a wide variety of construction and repair purposes. The machine can also handle grouting and refractory materials. (Cement Gun Co.)

For free copy circle No. 1 on postcard, p. 105

Air Hoists

Twelve models of a new series of quick-lifting air hoists with capacities of 500, 1000, and 2000 lb are described in a four-page brochure. (Coffing Hoist Div., Duff-Norton Co.)

For free copy circle No. 2 on postcard, p. 105

Automatic Lathes

An attractive new 26-page booklet describes two automatic production lathes and an automatic chucker, completely illustrating each and detailing machine features, accessories, and specifications. Twenty-five illustrated applications demonstrate their great versatility. (Gisholt Machine Co.)

For free copy circle No. 3 on postcard, p. 105

Metal-Turnings Crusher

Literature contains complete information and specifications on a metal-turnings crusher which can reduce up to 1½ tons of metal turnings per hour. Savings in labor, cutting oil, storage space, and shipping costs are stressed. (American Pulverizer Co.)

For free copy circle No. 4 on postcard, p. 105

Automatic Gage Control

A bulletin describes a gage control system which automatically controls mill stands to roll continuously uniform strip. It is designed to give greater yield per ton of steel from hot-strip mills. As off-gage strip passes through the stands, it "triggers" the control system and automatically makes the necessary corrections in mill settings. (General Electric Co.)

For free copy circle No. 5 on postcard, p. 105

Double-Row Bearings

Double-row ball bearings, including open, shielded, and snap-ring types, are described in a bulletin. Dimension and load specifications are included. They are useful with heavy radial loads, moderate thrust, and limited housing area. (Hoover Ball and Bearing Co.)

For free copy circle No. 6 on postcard, p. 105

Turret Drills

A line of turret drilling machines, work-positioning tables, and accessories is illustrated and described in a 22-page catalog. (Brown & Sharpe Mfg. Co.)

For free copy circle No. 7 on postcard, p. 105

Shape-Cutting Machine

A fully automated flame-cutting machine is described in an illustrated eight-page booklet. With unlimited capacity, it can reproduce metal parts from exact-size drawings through use of a photocell tracer. (Linde Co., Div. of Union Carbide Corp.)

For free copy circle No. 8 on postcard, p. 105

Free-Machining Steel

Physical properties of Jalcase 100, a free-machining, stress-stabilized cold-finished steel bar, are explained in an eight-page booklet. Mechanical properties, analysis, and machinability rating are included. Uses are listed. (Jones & Laughlin Steel Corp.)

For free copy circle No. 9 on postcard, p. 105

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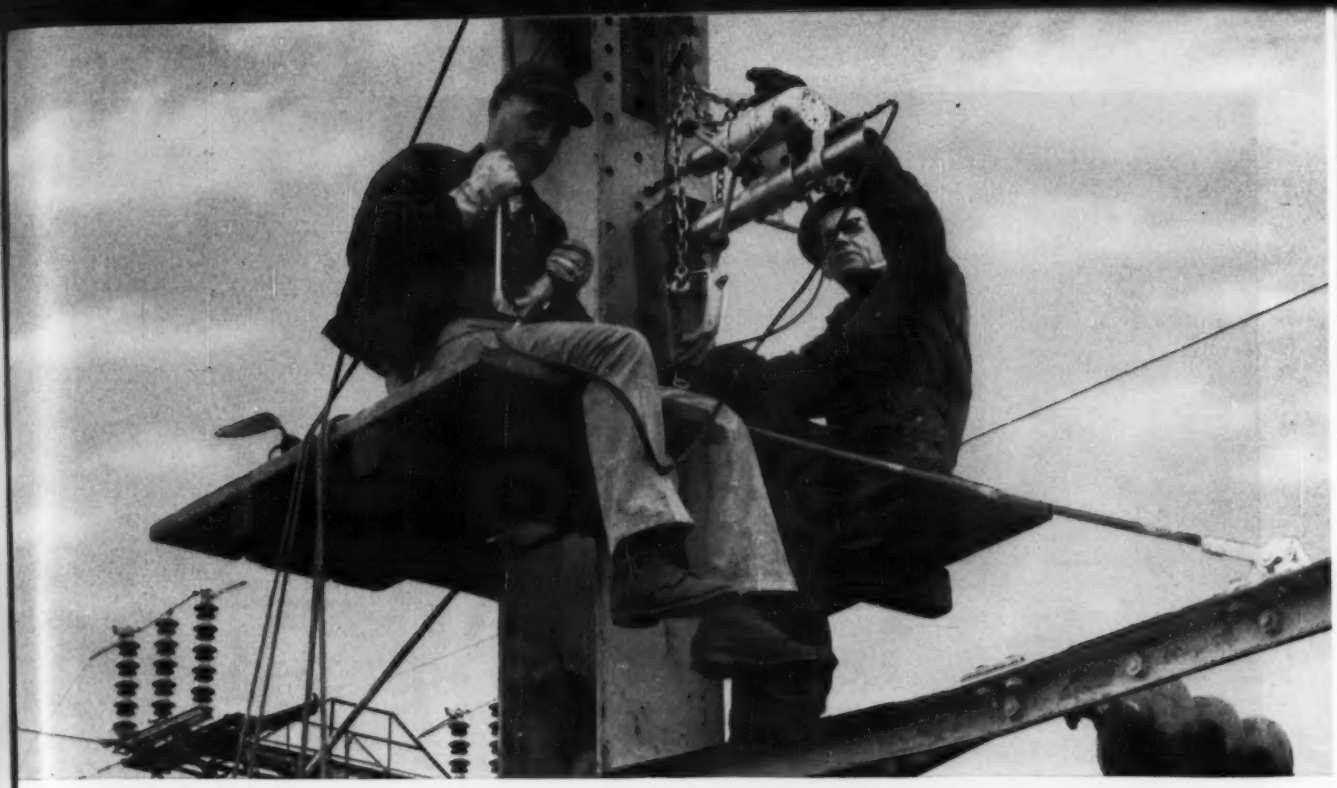
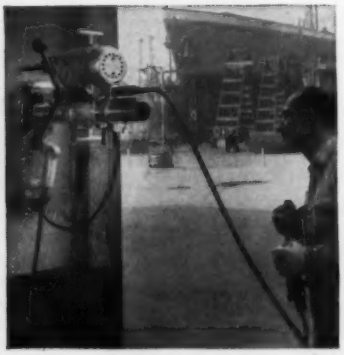


Job hard-to-reach, hard-to-handle?
Send for a B&D Magnetic Drill Press!

B&D 1¼" MAGNETIC DRILL PRESS works high overhead upside down; enables maintenance man to get into tight spots easily, rapidly.



TAKE 'EM ANYWHERE you need a drill press. Both are light weight, easily transported, simple to put to work; move to the next job.

B&D 1¼" MAGNETIC DRILL PRESS works upright on huge Air Chuck drilling and tapping; ready for instant moving to next operation.

B&D CADDY CART is the perfect way to transport your Magnetic Drill Press from job to job. Prevents damage to this peak precision tool.

Save hours . . . even days on every job . . . one use may pay for the tool!

Whether your job is production, construction or maintenance, a Black & Decker Magnetic Drill Press sticks like glue to the job. Lets you stand off and guide the bit from a distance. And it takes just finger-pressure to drill even a 1¼" hole with Black & Decker's exclusive Hydra-power Feed.

See one on your work. Two sizes to choose from: ¾" and 1¼"; both complete precision units—not attachments. Perfect for drilling, reaming, tapping in tool shops, steel fabricating, maintenance—anywhere you need a drill press but can't take the work to the tool.

Leading Distributors Everywhere Sell

Black & Decker®

Quality Electric Tools . . . Power-built for top performance

THE BLACK & DECKER MFG. CO.
Dept. 0908, Towson 4, Maryland

- ☐ Please arrange a demonstration of your ☐ 1¼"; ☐ ¾" Magnetic Drill Press
- ☐ Send me additional information
- ☐ Send me information on the tools checked below.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

☐ Impact Wrenches ☐ Hammers ☐ Belt Sanders ☐ Drills

SALEM-BROSIUS OFFERS YOU COMPLETE PLANT ENGINEERING SERVICE . . .

Throughout the world Salem-Brosius has expanded and diversified its service capacity to industry to an unusual degree. The company figures prominently in the engineering and erection of industrial furnaces, heavy industrial equipment and materials handling facilities.

It is a leading producer of various fabricated components of atomic reactors and aircraft engine test facilities, offers a wide line of water purifying, softening and purity testing equipment and has just introduced a system for treating and recovering waste cleaning and pickling acids.

Its line of stainless and alloy fabricated and machined parts is well known throughout the food, chemical and atomic energy industries, as is its ability to produce close tolerance machined assemblies and parts, such as stamping and forming dies for the automobile, aircraft, glass, electronic and other industries, plastic injection molding dies and dies for die castings.

Now, with expanded engineering and erection facilities, Salem-Brosius offers a complete plant engineering service. This service includes engineering and erection . . . a complete turnkey job . . . for plants, production lines or processing facilities for the steel, non-ferrous, glass and other heavy product industries.

If you are contemplating new plant capacity, expanded production facilities or revamped plant layout, it will pay you to inquire of Salem-Brosius.

A pusher-type furnace for heating stainless and alloy steel slabs for rolling. This is typical of the major industrial furnaces for which Salem-Brosius is well known.

SALEM-BROSIUS, INC.

PITTSBURGH, PENNSYLVANIA

Salem Engineering Limited, Toronto, Ontario • Salem Engineering Co., Ltd., London & Milford, England • Salem-Brosius, S.A., Luxembourg • Salem-Brosius, S.A., Paris, France • Alloy Manufacturing Corp., Pittsburgh, Pennsylvania • R. H. Freitag Manufacturing Co., Akron, Ohio • General Ionics Corp., Pittsburgh, Pennsylvania

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Fasteners

A four-page brochure outlines production facilities and engineering services for a complete line of all types of standard and special industrial fasteners. (Anchor Fasteners, Inc.)

For free copy circle No. 21 on postcard

Titanium Fact File

A 24-page "Fact File" covers the many aspects of titanium and titanium alloys and their uses. (Mallory-Sharon Metals Corp.)

For free copy circle No. 22 on postcard

Carbide Tooling

A 68-page catalog covers a complete product line including carbide tools and tips, toolholders, inserts, mill rolls, etc. Technical application data is included. (Metal Carbides Corp.)

For free copy circle No. 23 on postcard

Recessing Tools

A handy "Sketch Pad" serves as a convenient guide for specifying recessing tools. It helps to diagram the part and explain the machining operations to be used. (Maxwell Industries, Inc.)

For free copy circle No. 24 on postcard

Hard Chrome Plating

A catalog describes a new technique for instantaneous electrolytic hard chrome plating which eliminates surface corrosions and hydrogen embrittlements and results in a dense, fissure-free bond of alloy-like strength. Superior throwing power makes the process applicable to edges and holes without undesirable buildup. (Michrom, Inc.)

For free copy circle No. 25 on postcard

Material Handling

"Engineering and Application Data" is a newly revised booklet pertaining to overhead material-handling equipment, covering all types of such equipment, and the electrification thereof, in detail. Detailed studies of track design are included. (Cleveland Tramrail Div., The Cleveland Crane & Engineering Co.)

For free copy circle No. 26 on postcard

Pipeline Piping

A 40-page booklet describes the manufacture of steel pipeline piping ranging in size from ½ through 36 in. This range includes three types: continuous-weld, electric-resistance-weld, and electric-weld. Data on a line of this pipe are included. (Kaiser Steel Corp.)

For free copy circle No. 27 on postcard

Pump Catalog

Hundreds of pump types, models, and sizes covering any head conditions are covered in a catalog containing 576 pages of engineering data. It is arranged to facilitate selection of pumping units. (Distribution is limited; write on company letterhead to Hal Brunner, Publs. & Ind. Press Dept., Allis-Chalmers, PO Box 512, Milwaukee 1, Wis.)

High-Temp Tubing

Data on the mechanical and physical properties of seamless and welded carbon steel pressure tubing for use at elevated temperatures and pressures in heat-transfer equipment, is presented in a four-page folder. Fabrication information is included. (The Babcock & Wilcox Co.)

For free copy circle No. 28 on postcard

Conveyor Catalog

A 16-page catalog describes two types of overhead conveyors and

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FREE LITERATURE

presents case histories to show how cost savings resulted from using them. (Conveyor Div., The American MonoRail Co.)

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Pneumatic Control

A selector station described in a four-page bulletin can perform adjustments for remote manual trimming of pneumatic control systems, and for transferring from automatic to manual operation. There are 32 standard types. (Bailey Meter Co.)

For free copy circle No. 30 on postcard

Strip Solutions

Described in a three-page data sheet, two non-fuming, strongly acidic electrolytic strip solutions will strip chromium, nickel, copper, or bronze plate from zinc-base diecastings, brass, and aluminum. (MacDermid Inc.)

For free copy circle No. 31 on postcard

Mill Air-Cleaning

Air-cleaning requirements in steel mill operations are covered in a 16-page brochure offered by a manufacturer of air-filtering equipment, who includes selection recommendations on a part of his line. (American Air Filter Co., Inc.)

For free copy circle No. 32 on postcard

Light Pallet Truck

A 2000-lb-capacity hydraulic pallet truck is described in a four-page brochure. (Lewis-Shepard Products, Inc.)

For free copy circle No. 33 on postcard

Blind Rivets

A four-page folder describes a series of aluminum self-plugging blind rivets. Instructions for use are included. (Huck Mfg. Co.)

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Aluminum Structurals

A line of aluminum copings and gravel stops is described in detail in a folder of drawings and data. Nonrusting, they do not require painting. (Reynolds Metals Co.)

For free copy circle No. 35 on postcard

Welding Electrodes

Data sheets present characteristics and application data on a complete line of welding electrodes. (National Cylinder Gas Div., Chemetron Corp.)

For free copy circle No. 36 on postcard

Electroslag Welding

A four-page product bulletin covers equipment for electroslag welding. The equipment described is designed to weld sections from 1¼ to 14 in. thick with standard ⅛-in.-diam wire. Advantages of this process are stressed. (Arcos Corp.)

For free copy circle No. 37 on postcard

Handling Ideas

The latest issue of "Space," a material-handling magazine, includes a variety of features on the subject. A new simplified lift-truck control system is explained, plus a containerized cargo program, new handling ideas, and other subjects. (Hyster Co.)

For free copy circle No. 38 on postcard

Spotweld Fasteners

A six-page bulletin gives complete information on a line of threaded and pin fasteners designed for anchoring to components by spot-welding in assembly operations. Advantages of the type are stressed. (The Ohio Nut & Bolt Co.)

For free copy circle No. 39 on postcard

Tube Protectors

A line of strong plastic condenser and heat-exchanger tube protectors is described in a four-page bulletin. Flared tubular eyelets, they fit into and over tube ends to protect ends and positively prevent erosion and abrasion. Tube cleaners, cement, and extractors for use with the line are included. (Crane Packing Co.)

For free copy circle No. 40 on postcard

. . . meets every spring construction requirement

Samson Spring Wire—an up-to-the-minute product of Keystone Steel & Wire Company, with modern performance characteristics—is available to fulfill every spring construction.

Samson Spring Wire is custom made with the correct finish, temper and tensile to fit each use. Users like the uniform size and coiling characteristics of Samson Spring Wire.

We invite you to contact your Keystone representative for complete details on Samson Spring Wire. Call him today—or write direct.

name your need . . .

- Upholstery spring wire, coiling and knotting quality
- Upholstery spring wire for marshall pack units
- Special upholstery spring wire for use in automatic coiling and knotting machines
- Common lacing wire
- Special automatic lacing wire
- Spring wire for cross helical springs and for short tension springs
- High carbon wire for borders and braces
- High carbon wire for cold rolling into border and brace sections
- Wire for severe crimping or clinching upholstery spring construction

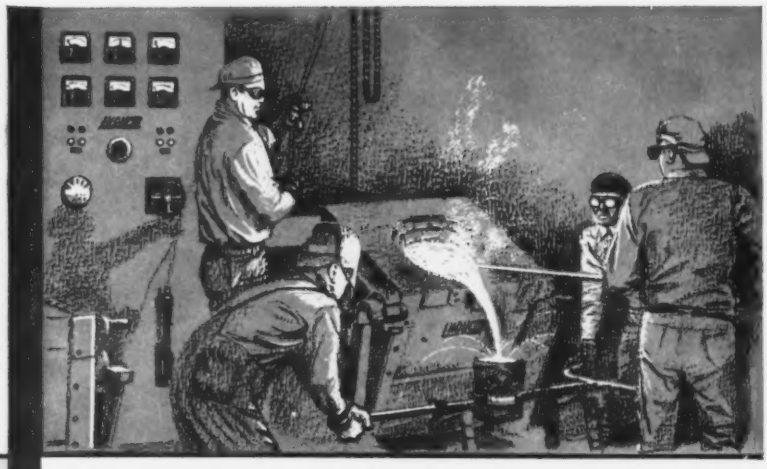
Keystone Steel & Wire Company
Peoria 7, Illinois

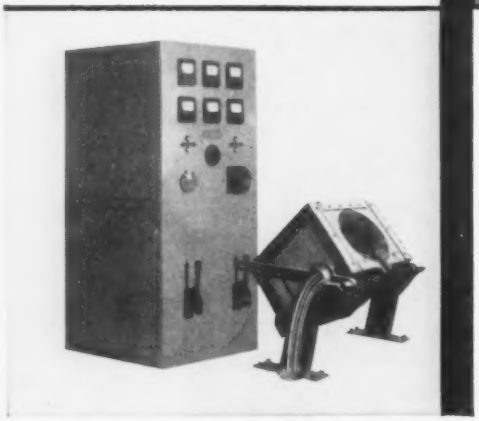
KEYSTONE
WIRE FOR INDUSTRY

INDUCTOMELTING MEANS*

SAVINGS

THROUGH FASTER MELTING





Although faster melting speed is one of the inherent advantages of high frequency induction melting, maximum efficiency depends upon the engineering and manufacturing excellence of the equipment itself.

To ensure for you every advantage associated with high frequency induction melting, plus others which are exclusive with our equipment, we build into every INDUCTO unit only the finest components and materials specifically engineered to render maximum melting service.

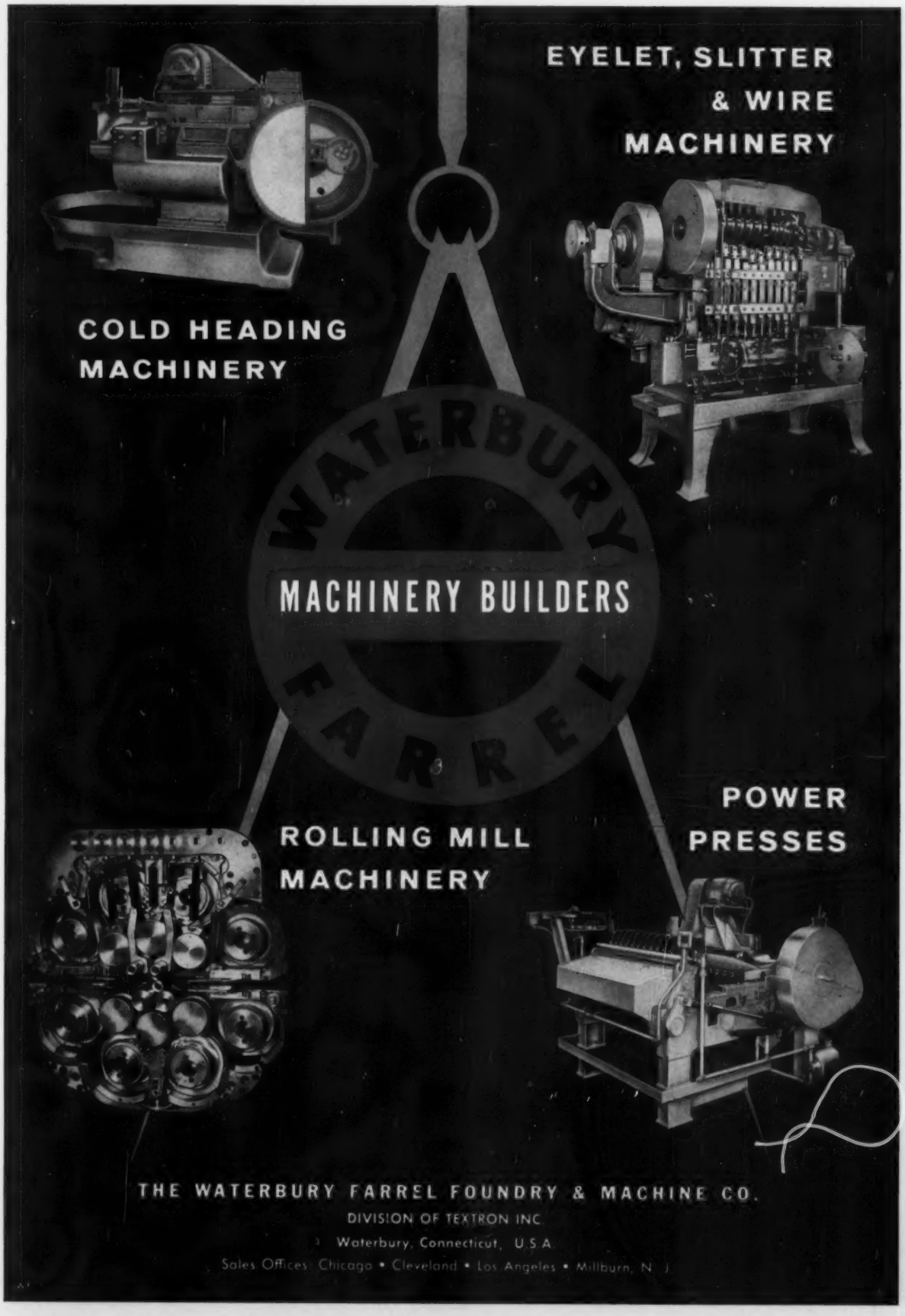
For instance, you'll have lower melting losses because the metal is in the furnace for shorter periods of time. There will be substantially less alloy burn-off. You'll have more complete control of your metal analysis and there will be less heat loss. These are a veritable bonus of advantages which come to you through the use of INDUCTO equipment.

This, too, is INDUCTOMELTING . . . substantial savings through faster melting. For complete details, write today for our Bulletin #70.
Inductotherm Corporation, 412 Illinois Avenue, Delanco, N. J.

**INDUCTOMELTING is high frequency induction melting PLUS the additional advantages of INDUCTO design features and engineering techniques.*

INDUCTOTHERM

INDUCTO ... the mark of modern melting


EYELET, SLITTER
& WIRE
MACHINERY
COLD HEADING
MACHINERY
WATERBURY
FARREL
MACHINERY BUILDERS
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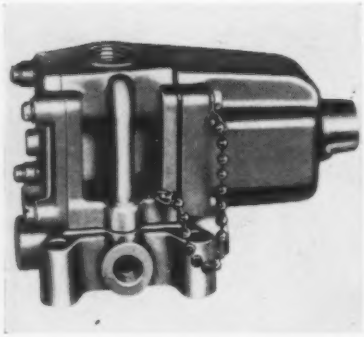
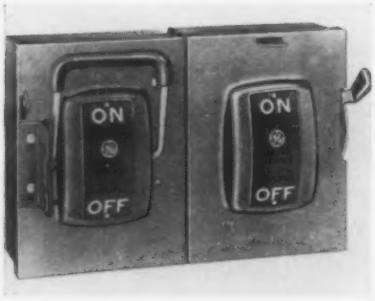
New Materials and Components



Small Air Valves Are Heavy-Duty Performers

A junior-sized series of low-cost air valves have all the features of a larger series and provide heavy-duty performance. They are particularly applicable to automatic assembly machines and packaging operations. They will operate air cylinders having up to 4-in. bores where high piston speeds are not necessary. There are two types: a single-solenoid spring-return four-way, and a double-solenoid momentary-contact four-way. For service pressures or vacuums to 300 psi, they offer fast response and speeds to 450 operations a minute. Several electrical ratings are available, and modifications for two- or three-way operation. (Numatics, Inc.)

For more data circle No. 50 on postcard, p. 105



Safety Switches Have Many New Features

New safety switches have many features for safety in operation and long life. A bright red insulated handle and large nameplate provide ON-OFF identification from over 100 ft away. Fiber parts are eliminated to prevent deterioration or rupture. Ratings for the heavy-duty models are 250 and 600 v ac, 30 to 600 amp. Light-duty switches rate 120/240 and 240 v ac, 30 to 600 amp. Other safety features include visible blades, unobstructed wiring gutters, and safety barriers to prevent line-to-line contact during inspection and maintenance. (General Electric Co.)

For more data circle No. 51 on postcard, p. 105

25:1 Speed Reducer Handles 154 hp at 75 rpm

A line of shaft-mounted speed reducers now includes a new 25:1 double-reduction series in eight sizes. Output speeds of the series range from 12 to 400 rpm. The 25:1 reducer is rated at 154 hp at 75 rpm, its maximum recommended output speed. It will give 40 pct lower output speeds with identical motor speeds and V-drive ratios, and when output speeds are the same, lower-ratio V-drives can be used at reduced cost. (Dodge Mfg. Corp.)

For more data circle No. 52 on postcard, p. 105

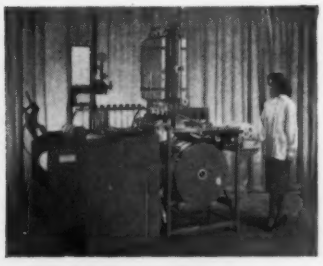
Hose Clamp Is Easy to Apply in Production

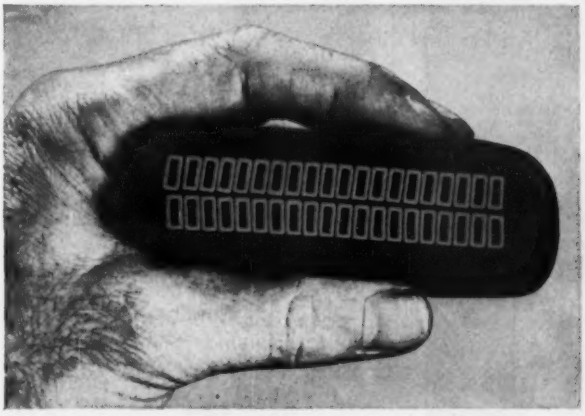
A one-piece clamp for low-pressure hose and tubing clamps permanently with one squeeze of a simple tool. Squeezing its single U-shaped locking lug tight firmly binds the hose to its fitting. If removal is necessary, the lug is simply snipped off with the pincer part of the tool. A pneumatic setting tool is available for assembly-line operations. The clamp comes in 15 standard sizes from 0.42 to 1.22 in. ID. A double-lug variation accommodates diameters to 2⅝ in. (Cuyahoga Products Corp.)

For more data circle No. 53 on postcard, p. 105

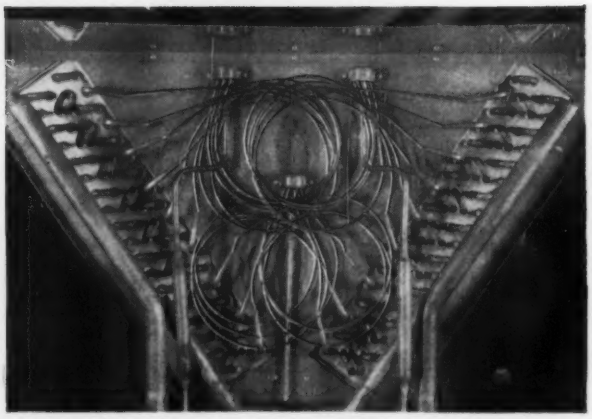
BETTER WAYS of doing things with seamless copper tube are unlimited—from capillary sizes to 26-inch diameter—round tubes or special shapes.

A better product faster. In the Kodak Roll Paper Dryer-Glazer shown below, photographic print paper travels around a heated, mirror-smooth, chromium-plated copper drum. This drum could be formed from sheet metal, welded and ground. But Eastman Kodak Company takes a production short cut and buys the drums ready made—Anaconda seamless copper tube 26″ inside diameter, in wall thicknesses of ⅛″, cut to 20″ lengths. Having the thermal conductivity and corrosion resistance needed, the tube is also easy to polish to a high mirrorlike finish (photo, left), provides an excellent base for fine chromium plating. No seams mar the surface. Production time and steps are cut.





Rectangular copper tube carries current and coolant. By liquid cooling conductors in generator stator bars, General Electric has opened the way to doubling generator ratings without appreciably increasing frame size. Tubes, approximately 0.300″ x 0.130″ O.D., shown in cross section above, are shipped in long coils. Special-shape tubes are available in a wide variety of sizes, cross sections, and alloys.



High-precision tubes meter fluids. York Corp., subsidiary of Borg-Warner, has found restrictor-tube metering of refrigerant in packaged air-conditioning units up to 25-ton capacity has greatly reduced field service, made possible the 5-year protection plan on all units. Anaconda Copper Restrictor Tubes have consistently met York's strict requirements. These tubes are available in copper or aluminum in nominal I. D.'s from .025″ to .090″.

WHETHER you need long lengths of copper capillary tubing for air, hydraulic, or lubricating lines or for instrument tubing—or large-diameter tube in copper or a copper alloy, call your American Brass Company representative. He can help you select the product you need from the broadest range of seamless tubes available to industry. Or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

ANACONDA®

SEAMLESS COPPER TUBE

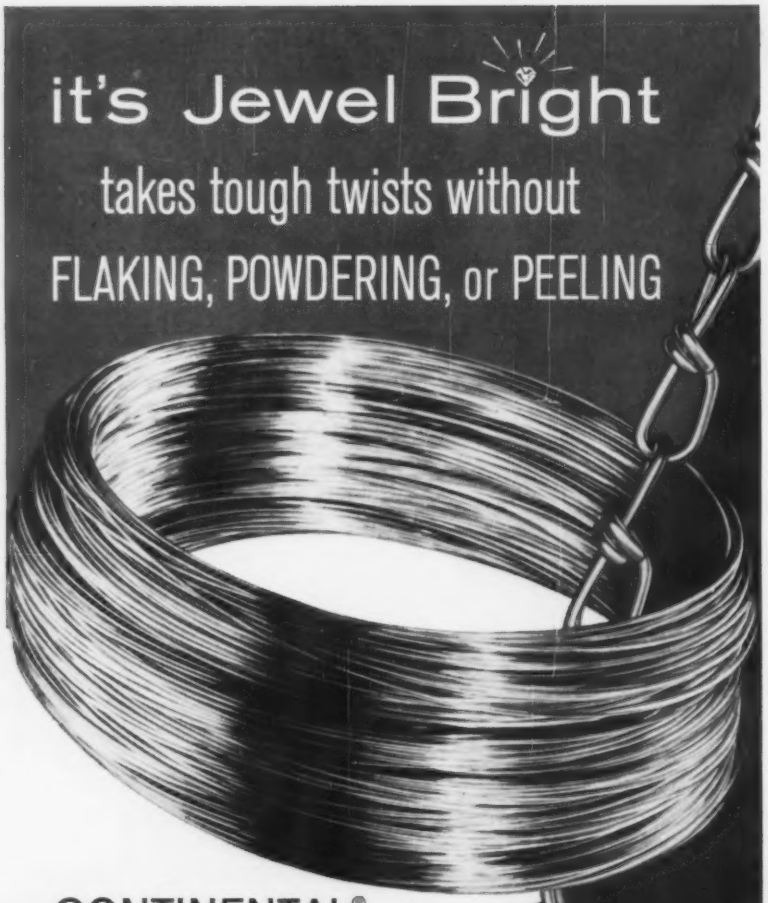
CAPILLARY TUBE • SPECIAL SHAPED TUBE

Made by The American Brass Company

it's Jewel Bright

takes tough twists without

FLAKING, POWDERING, or PEELING



CONTINENTAL®

Brytite®

A PATENTED GALVANIZING PROCESS

CHAIN QUALITY WIRE

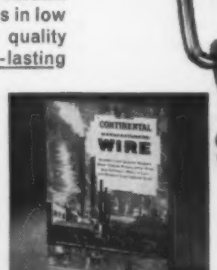
The Zinc Coated Wire with the Plated Look

Brytite Wire is so shiny bright and satin smooth that electroplating and special finishing operations are not needed —a valuable saving in labor and materials! The coating is so tight that it withstands severe deformation of the base metal—takes hard turns and twists without flaking, powdering, or peeling.

In Many Sizes, Finishes, Tempers and Analyses

Specify BRYTITE in Satin Finish, Unwiped, or redrawn (in certain sizes)... in various tempers and analyses in low carbon and medium low carbon steels... for quality weldless or twisted wire chain, or wherever long-lasting brightness is desired. Special shapes, too.

Free Manual of Continental Manufacturers' Wire. Contains details of BRYTITE and other types of Continental Wire. Write for copy.



Fine Finishes in Manufacturers' Wire

CONTINENTAL STEEL

CORPORATION—KOKOMO, INDIANA

PRODUCERS OF: Manufacturers' Wire in many sizes, tempers and finishes, including Galvanized, KOKOTE, Flame Sealed, Coppered, Tinned, BRYTITE, Annealed, Liquor-Finished, Bright, and Special Shaped Wire. Also Reinforcing and Galvanized Fabric, Nails, Continental Chain Link Fence, and other products.

DESIGN DIGEST

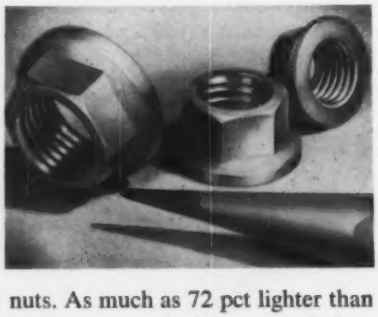
Rinse Aid Agent

A rinse aid addition agent promotes drainage of plated parts and cuts the number of plating rejects. Small concentrations added to the hot-water rinse reduce surface tension, causing water to rinse off faster and reducing water stains to a minimum. The agent is a combination of organic active agents and solvents. Normal use requires only 2 fluid ounces per 100 gal of rinse water. (Hanson-Van Winkle-Munning Co.)

For more data circle No. 54 on postcard, p. 105

Lightweight Locknuts

A series of featherweight locknuts designed to save weight in aircraft and missile design is presently available in diameter sizes #4 through ⅝ in., as a substitution for a broad family of medium-strength lock-



nuts. As much as 72 pct lighter than some now used, they are cadmium plated either with or without molybdenum disulphide high-temperature coating. (Standard Pressed Steel Co.)

For more data circle No. 55 on postcard, p. 105

Burner Shutoff Valve

A water-cooled gas-burner shutoff valve, for use on blast-furnace stoves, requires only 11 seconds to close, and is intended to replace components which require 2 minutes or more to operate. Designed to reduce time to change blast-furnace stoves, it assures a gas-tight seal and is mounted directly to the stove, thus preventing gas leaks at the burner. Protected to high operating temperatures of 1900°F

and more, it is available in diameters of 32, 39, 48, and 56 in., for burning 12,000 to 35,000 cfm of gas. (William M. Bailey Co.)

For more data circle No. 56 on postcard, p. 105

Recycling Controller

A new recycling controller offers three variations of automatic counting and switching: one-count switching, one-cycle switching, and differential (add and subtract) counting and switching. Typical applications

are interval indication in high-production count, forward and reverse control with preset limits, size control, and container filling. It recycles without pause or hesitation, and has no cumulative error and remains in step, thus being ideally suited for continuous as well as intermittent counting applications. It counts at speeds up to 1000 counts per minute, and can be preset to any cycle from 1 to 100 counts. It operates on standard current. (Counter and Control Corp.)

For more data circle No. 57 on postcard, p. 105

Aluminum Filler Wire

A magnesium - aluminum filler wire is designed for use with MIG and TIG processes in welding high-tensile aluminum alloys. Having a Type "A" finish to produce a consistently uniform surface, it can be used to produce high-strength joints where post heat-treatment is not feasible. (Air Reduction Co., Inc.)

For more data circle No. 58 on postcard, p. 105

Liquid Steel

A steel filling compound is a combination of atomized steel and bonding resins in a heavy-body liquid form. Easy to apply, it will permanently adhere to most metals and will bond securely to almost all materials. After drying, it can be cut, filed, sanded, or machined. Useful for filling holes and imperfections in metal castings, it can be brought to the color of nonferrous parts by burnishing it with a piece of the same metal after it dries. (Woodhill Chemical Co.)

For more data circle No. 59 on postcard, p. 105

Steel Deoxidizer

A new supplementary deoxidizer for foundry steels is a silicon-titanium-calcium-iron alloy. Ladle deoxidation with aluminum plus this additive brings an increase in yield strength of the steel without loss in ductility. It also causes better fluidity of the molten steel and better machinability of castings. (Vanadium Corp. of America)

For more data circle No. 60 on postcard, p. 105

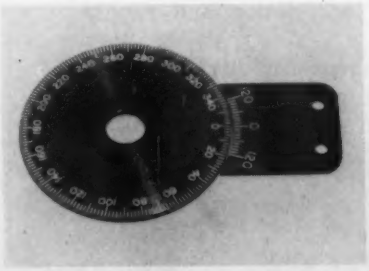
Chemical-Milling Masker

A light - sensitive, etch - resisting plastic coating serves as masking for chemical-milling a wide range of metals. Sensitive to light, it is applied to the surface of the part to be milled, and the pattern of the area to be protected is imprinted by light upon it, by a photographic negative or some other means. Light-exposed areas resist the action of the etching solutions. (Eastman Kodak Co.)

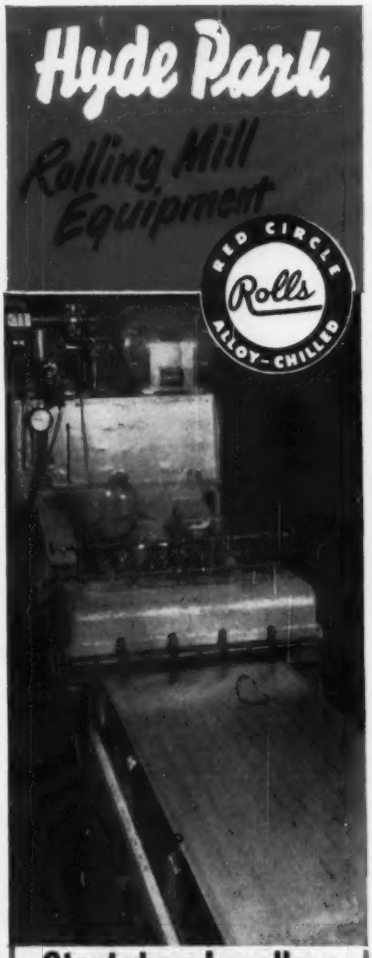
For more data circle No. 61 on postcard, p. 105

Precision Dials

A line of precision engraved disk dials are aluminum black anodized



and available in standard diameters of 1½, 3, and 4 in., with bores



Stretcher Levellers

Complete range of stretching capacities from 150 to 750 tons, for levelling ferrous and non-ferrous sheets in sizes up to 120" wide x 500" long.

Speeds and length of "stretch" to meet all requirements.

Adaptable for automatic cycling.

Bar Mills • Merchant Mills • Sheet and Strip Mills • Pinion Stands
Roller Tables • Reduction Drives
Stretcher Levellers • Roll Lathes • Guillotine Shears
Special Machinery • Sheet Mill Shears • Machine Work

Hyde Park
FOUNDRY and MACHINE CO.
HYDE PARK
Westmoreland County, Pa.

Rolls
Rolling Mill Equipment
Gray Iron Castings

DESIGN DIGEST

from 0.120 to ¼ in. (PIC Design Corp.)

For more data circle No. 62 on postcard, p. 105

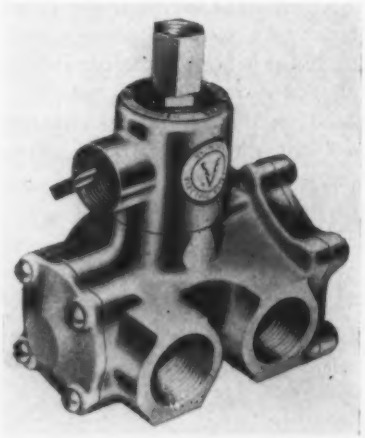
Ramming Mix

A new 85-pct alumina ramming mix is recommended specifically for lower sidewalls and bottoms of aluminum melting and holding furnaces because of its high resistance to penetration by molten aluminum and slags. It is also used in malleable iron furnace sidewalls, and rammed electrode sections of electric furnace roofs. Strong, it eliminates joints and special brick and mortar, and can be installed by unskilled labor. (H. K. Porter Co., Inc.)

For more data circle No. 63 on postcard, p. 105

Three-Way Valves

A series of high-flow three-way solenoid valves are designed to control all common fluid media in general industrial use, including water, oil, air, fuels, and inert gases. Compact and light, they operate on a pressure differential of 5 to 150 psi. They come in orifice sizes of ⅜,



½, and ¾ in., as normally open, normally closed, or directional-control models, in a wide range of voltages and frequencies, and with many electrical options. They are constructed for bubble-tight operation and long life. (Skinner Electric Valve Div. of the Skinner Chuck Co.)

For more data circle No. 64 on postcard, p. 105

NEW BOOKS

"A Diderot Pictorial Encyclopedia of Trades and Industry," ed. by C. C. Gillispie, contains handsome reproductions of 485 selected plates from the classical 18th-Century encyclopedia of Denis Diderot, together with explanatory comment. All trades are represented, including the metalworking arts. 2 vol., 920 pp. $18.50 per set. Dover Publications, Inc., 920 Broadway, New York 10.

"Anniversary Celebrations Made Easy," by J. D. Peel, covers planning, organization, and the publicity and public-relations values of such observances. 318 pp. $5 per copy. Chilton Co.

Steel Service Centers throughout the country have built up their inventories in anticipation of a suspension in steel production. These stockpiles totaling almost 3,600,000 tons are valued at ¾ billion dollars. If you have been using a steel service center as your source of supply—you can thank your lucky stars—because chances are they will still be able to fill your requirements.

Each distributor's representative is a metal specialist and is qualified to assist you with application and supply problems.

MICROROLD STAINLESS STEEL is regularly carried in stock in 252 of these independent steel warehouses. Washington Steel is a producer of sheet and strip exclusively, all of which is precision rolled on Sendzimir mills.

WASHINGTON STEEL CORPORATION

8-L Woodland Avenue, Washington, Pa.

Put the bite on metal separating costs

Hold the metal separating line with Nicholson or Black Diamond Hacksaw and Band Saw Blades. We make blades to speed your work and hold the cost on almost every kind of industrial metal separating job. You'll see what this means when you try our blades. Your Nicholson or Black Diamond Blade Distributor will be glad to work closely with you. He'll help you choose the right blades for the job. Talk with him. The results of your talk may well lead to lower costs and improved results. Ask him, too, for the advantages in using our Precision Ground Flat Stock. He has money-saving data on this product.

* **Industrial Distributors provide the finest goods and services in the least possible time. We sell exclusively through them.**

NICHOLSON

NICHOLSON FILE COMPANY, PROVIDENCE 1, RHODE ISLAND

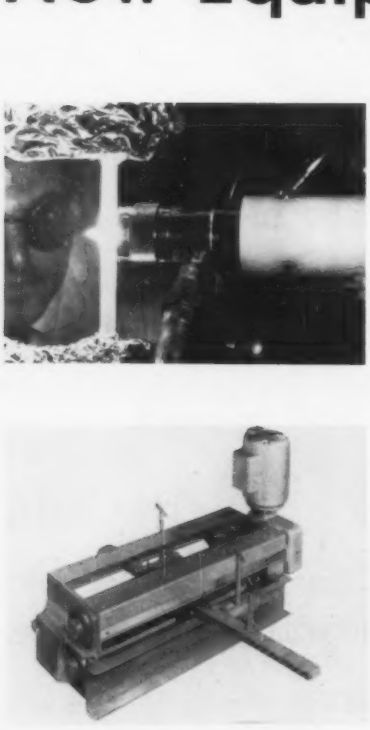
FILES • ROTARY BURS • HACKSAW AND BAND SAW BLADES • GROUND FLAT STOCK INDUSTRIAL HAMMERS

New Equipment and Machinery

High-Heat Unit Flame-Sprays Refractories

A heat source (shown under temperature test) powered by a welding generator develops heat from 2500° to 12,000°F, permitting flame-spraying refractory oxides and ceramics onto materials to increase their refractory properties. Material fed as powder into the flame becomes liquid and is hurtled in fine droplets on the surface being plated. The unit is a high-intensity arc with tungsten cathode and copper anode. It can also be used for materials testing and spectroscopy. (Avco Corp., Research & Adv. Dev. Div.)

For more data circle No. 70 on postcard, p. 105



Power Slitting Shear Is Rugged and Accurate

A power slitting shear insures straight, accurate cuts and withstands even the heaviest stresses. A spring-loaded sheet-retaining roller applies correct pressure to the inside edge of the sheet to keep it in proper alignment for accuracy. The back gage is clamped to both sides of the frame to provide maximum support and strength. Reversible and interchangeable hard-alloy cutters are powered by a heavy-duty drive. The shear comes in capacities of 10, 14, and 20 gage, and can cut any width from 1½ to a maximum of 30 in. (Beverly Shear Mfg. Co.)

For more data circle No. 71 on postcard, p. 105

Tool Up Drill for High Precision at Low Cost

A multiple-spindle drilling, boring, reaming, and tapping machine is designed to work nonferrous parts with high precision, using low-cost tooling. The key is a wobble-plate drive eliminating gearing in the heads and permitting a new head assembly to be built for each new job, using interchangeable spindles and parts. Standard tool adapters permit presetting of quick-change tooling to cut downtime. Tolerances to 0.0002 in. can be held on all dimensions, owing to accuracy built into tooling, and to use of a soaking tank to bring parts to overall coolant temperature prior to machining. Very tight center distances are possible. (Sundstrand Corp.)

For more data circle No. 72 on postcard, p. 105

Gage Draws Thickness Profile of Sheet Stock

Statistical examinations of sheet thickness are easy with a pneumatic gage recorder, which eliminates tedious hand-"miking" and the human error that can go with it. With this equipment, the operator simply moves the size-sensing element along the sheet, or vice versa, and size deviation is automatically charted on a 4-in.-wide strip chart. Chart speed is adjustable. Both contact and non-contact air-gage tooling can be used. Both internal and external dimensions can be inspected, including bores (with a spindle attachment). There is also a two-dimension unit. (The Sheffield Corp.)

For more data circle No. 73 on postcard, p. 105

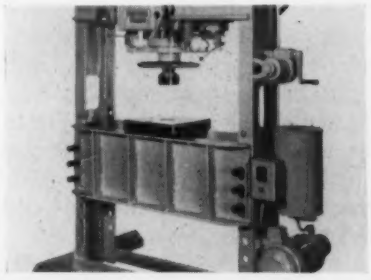
Variable-Grit Grinders

As grinding wheels wear, surface speed and contact arc both become less, resulting in slower material removal. A line of variable-density grinding wheels automatically compensates for these conditions, with uniform action all the way down, and with uniform microinch finishes all the way also. (Waltham Grinding Wheel Co.)

For more data circle No. 74 on postcard, p. 105

150-Ton Hydraulic Press

With a frame of welded construction for maximum rigidity and minimum deflection, a hydraulic press handles heavy-duty jobs requiring pressures up to 150 tons. The ram is tough, heat-treated and ground to 16-microinch finish. A handwheel permits rapid approach and reserves full power stroke for work itself. The hydraulic system is



rugged and completely enclosed. Safety features include a positive overload valve and continuous pressure indication. Controls permit simple "cut-and-try" adjustments. There are two models, 2- and 5-hp, with full-load ram speeds of 2 and 7.5 ipm, respectively. Ram and screw travel are both 8 in.; table is adjustable 24 in. (American Chain & Cable Co., Inc.)

For more data circle No. 75 on postcard, p. 105

Groove Micrometer

An internal micrometer employing a pair of flange-type extensions on spindle and barrel, respectively, measures cylinder groove and land widths, O-ring widths, and groove and keyway locations. Measurements from 0.050 to 1.050 in. are possible for groove widths, and from 0 to 1 in. for lands and

New! HYDRAULICALLY OPERATED

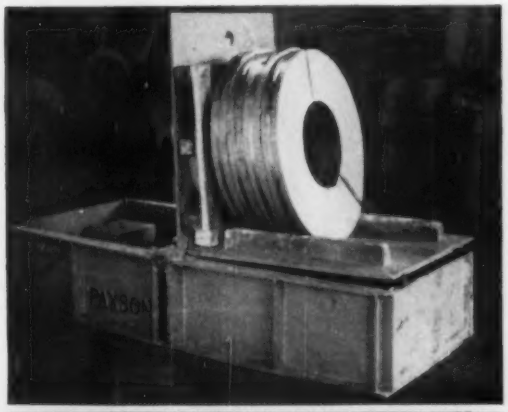
PAXSON COIL UP-ENDER

MAKES COIL HANDLING EASIER...SPEEDIER!

Easily and quickly turns coils to either vertical or horizontal position! Eliminates gadgets and home-made devices for turning coils to desired position.

The Paxson **COIL UP-ENDER** may be stopped in any position from horizontal to vertical, and the speed of upsetting is controllable through a hand-operated regulating valve.

ANOTHER NEW IDEA IN THE PAXSON SLITTING SYSTEM FOR CONTINUOUS PRODUCTION



STEP 1

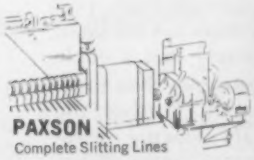
Place vertical coils on platform after positioning on pallet.

STEP 2

Simply press electric control...

STEP 3

Coils are ready for removal to truck for shipment, to storage bay, or to machines in position ready for use.



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Complete Slitting Lines

- 40 years of experience building Slitting Lines
- Complete Slitting Lines or component parts available

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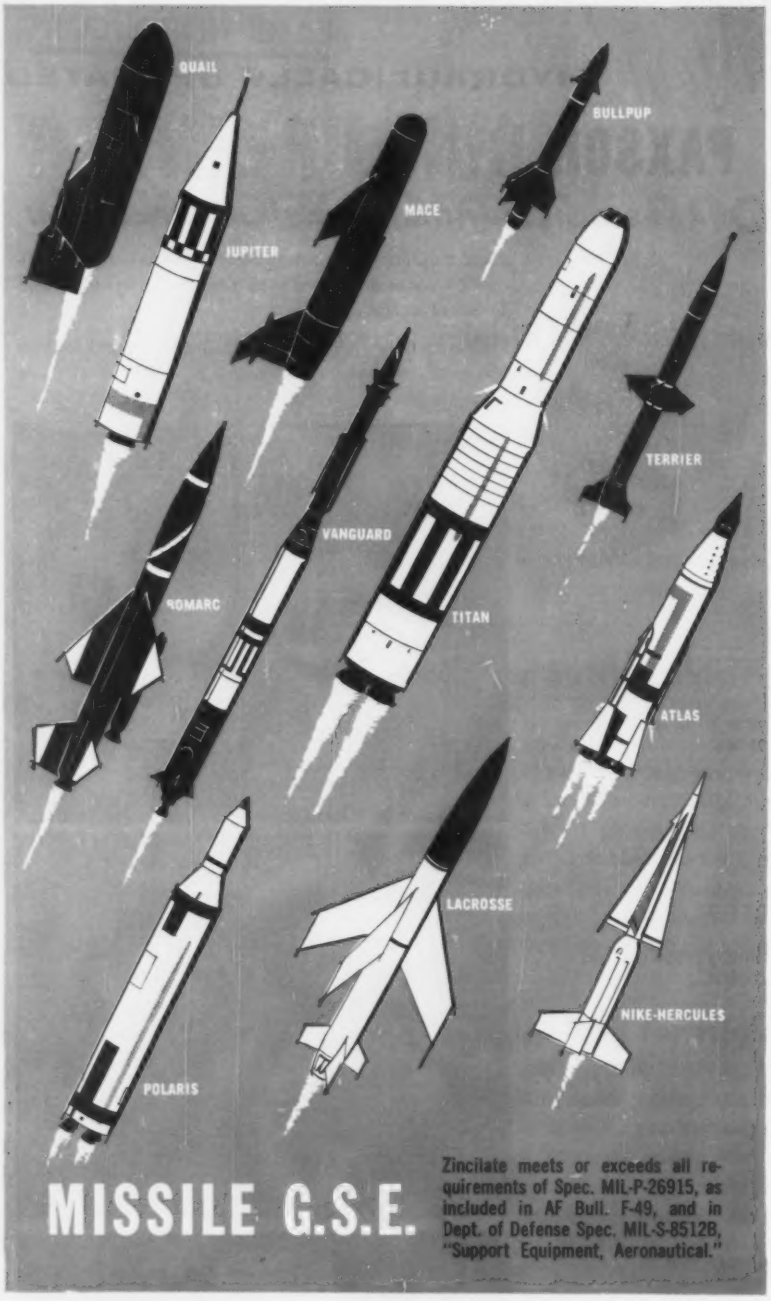


On much of the Missile Ground Support Equipment being produced today, the 1-coat Zincilate finishing system has replaced more costly multi-coat systems. This means simply that a single coat of Zincilate provides as much or more protection than three or even four coats of the materials formerly used. Further, the Zincilate 1-coat system eliminates five of the six cleaning operations required under the old methods. You can give your product —military or commercial—the best protection possible, and still cut your finishing costs, by using Zincilate. Write today for complete information.

PROTECTION that SELLS your PRODUCTS

INDUSTRIAL METAL PROTECTIVES

402 Homestead Ave. • Dayton 8, Ohio • BAldwin 2-6747, 2-6748

distances between grooves. It will locate from an external reference to its probe depth of 5¾ in. (Navan Products, Inc.)

For more data circle No. 76 on postcard, p. 105

Quick-Change Adapter

A collet adapter speeds up tool changes on mills, jig-borers, and other machines. It holds tools accurately and securely, through a mechanical leverage produced by in-

ternal balls and tapers plus the lugs of the locking lever. It is available in six styles to accommodate the spindle tapers on a wide range of machines. (Tree Tool and Die Works)

For more data circle No. 77 on postcard, p. 105

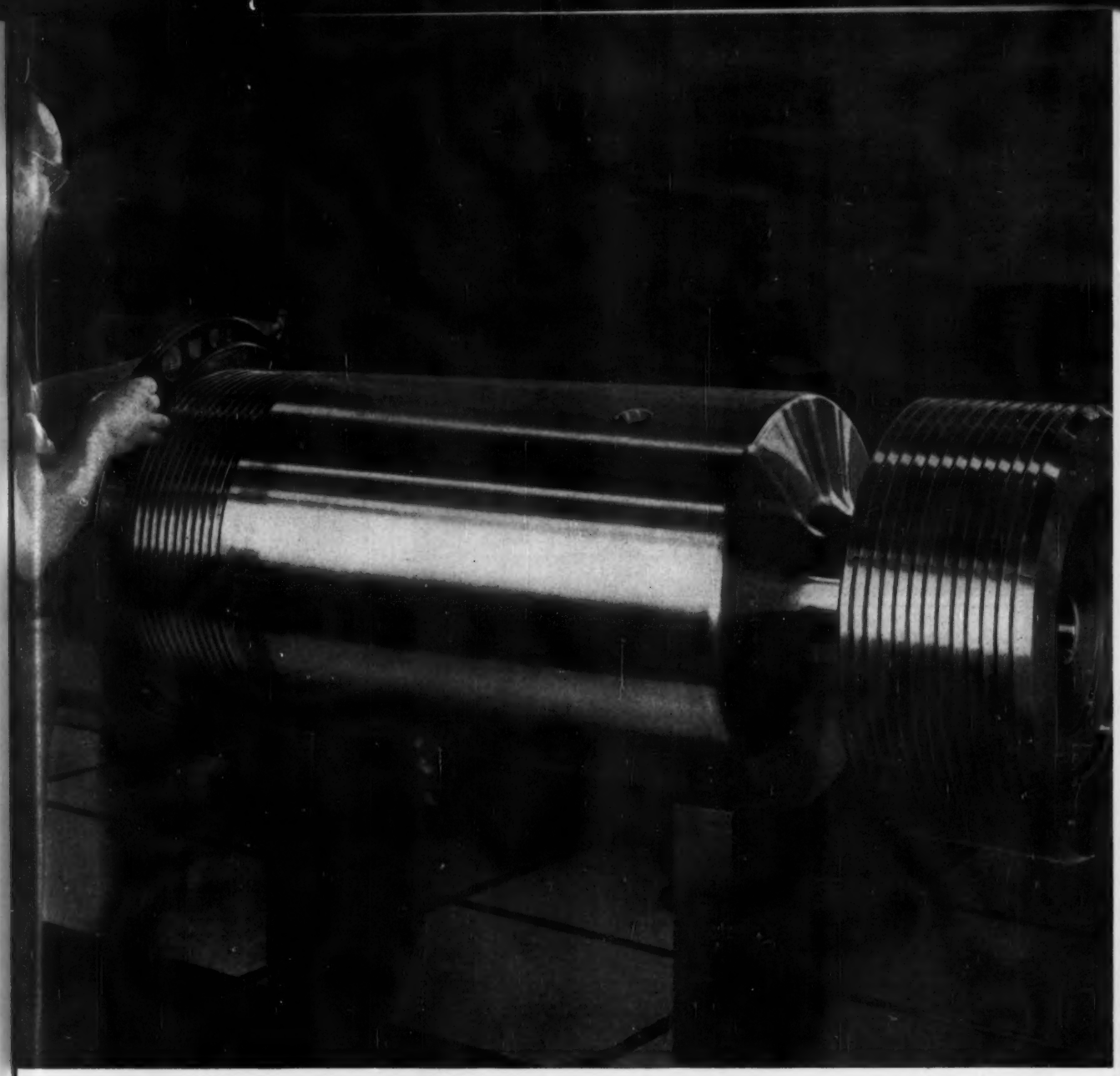
Spark-Discharge Cutter

A line of electrical discharge machining equipment is now in production. New circuits enable greater cutting current. A more informative control panel, and simple construction for speed and economy, are also featured. (Matson Co.)

For more data circle No. 78 on postcard, p. 105

Vibration Pads

A new anti-vibration material, available cut to order or in standard sheets, eliminates 90 pct of the destructive vibrational tremors and noise caused by machines, thus preventing material deterioration and reduced personnel efficiency. A tough elastomeric vinyl plastic and fiberglass are fused in layers in such a manner as to prevent resonance and isolate the vibration. The ma-



WHO FORGES THE TOUGH ONES?...
and precision-machines them, too?

When the forgings come as tough as this motor housing, the customers come to National Forge. On this job (for a chemical manufacturer), we had to forge and precision-machine to extremely close dimensional tolerances (+.0020", −.0002" including run-out).

National Forge handled the complete production—from melting AISI E4340 steel, to forging, to hollow boring, to finish-machining—in our integrated "one-source" plant.

You say *your* forging specs are tough? Call National Forge, the company with over 40 years' experience in forging and precision-machining the tough ones.

NF *NATIONAL FORGE COMPANY*

IRVINE, WARREN COUNTY, PENNSYLVANIA

For more information on "the tough ones," and the machinery that makes them "best"—write for bulletin NF 59-02

terial is low in cost. (Lowell Industries, Inc.)

For more data circle No. 79 on postcard, p. 105

Hydraulic Stretcher

A 20-ton hyldraulic stretcher is available for straightening extruded sections of aluminum and other modern metals at high production speeds. Extrusions up to 100 ft long can be handled at high production rates. At under 6 tons' pressure, higher speeds, up to 400 ipm, can be realized. Length of headstock stroke is 48 in. Vertical jaw design enables fast material handling (Sutton Engineering Co.)

For more data circle No. 80 on postcard, p. 105

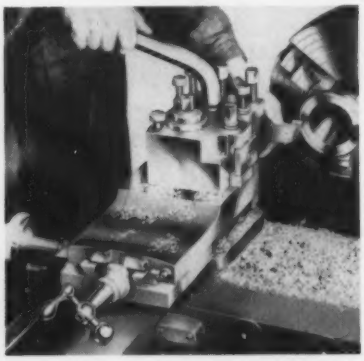
Heating Furnace

A low-cost heating furnace fueled with natural gas, bottled gas, or diesel oil can attain 3150°F, and starting cold can melt a mild steel bar in 3½ minutes. With a 6½ x 6½-in. heat outlet, it is portable and operates in any position. (W. C. Cheney Mfg. Co.)

For more data circle No. 81 on postcard, p. 105

Lathe Tool Holder

A Swedish-made tool holder for lathes with 16-in. swing and over provides great rigidity and accuracy



because it is locked against the body of the tool post. (Homestrand, Inc.)

For more data circle No. 82 on postcard, p. 105

Metal-Turnings Crusher

A new metal-turnings crusher has a capacity up to 1½ tons per hour. It saves money by processing turnings into more marketable form and by salvaging 30 to 50 gal of cutting oil per ton, and saves space and shipping costs as well. (American Pulverizer Co.)

For more data circle No. 83 on postcard, p. 105

Safety Floor Mats

Individual grill-type steel floor mats protect workers from sharp chips and give protection against slipping on oil-soaked floors. (Bustin Steel Products, Inc.)

For more data circle No. 84 on postcard, p. 105

Vibrating Finisher

A vibrating cleaning, descaling, and finishing machine is available. Time cycles are very short, with production rates higher than with conventional barrel finishing techniques. The work zone extends throughout the entire abrasive mass, and not just through a sliding zone several inches deep, as in barrel

NON-FLUID OIL
TRADE MARK REGISTERED

MOST EFFECTIVE FOR PRESSURE LUBRICATION

NON-FLUID OIL meets every requirement of a lubricant for centralized pressure lubrication no matter what types of bearings are to be served by the system. Because it is neutral, NON-FLUID OIL is particularly desirable for ball and roller bearing applications, as it protects these bearings from pitting and corrosion.

NON-FLUID OIL is the most effective lubricant for modern centralized pressure lubrication systems. It does not disintegrate, thin out under heat, harden at low temperatures or, under highest pressures, cause valves in systems to stick and function improperly.

Try it yourself. Write now for useful Bulletin No. 522 and a free sample for on-the-job testing.

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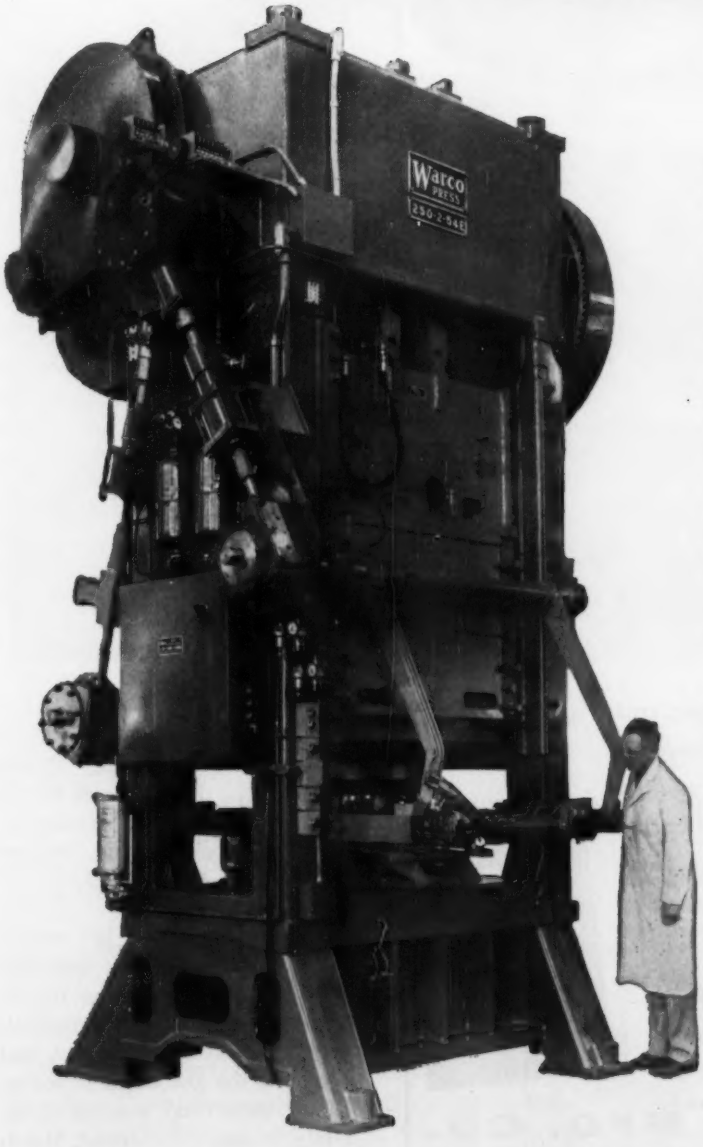
NON FLUID OIL is not the name of a general class of lubricants but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly to use.

Warco automation



You can expect mechanical presses of unsurpassed quality when you specify Warco, for every Warco press is designed and custom built with machine tool precision. The result: Warcos work better, faster—with substantially reduced maintenance.

This typical Warco 250 Ton Double Eccentric Shaft Straight Side Press is being used by a leading farm equipment manufacturer to automatically feed and *hot form* the camber and accurately punch and countersink bolt holes in heavy gauge plow shares, discharging them automatically into a heat treating bath. Press slide incorporates a hydro-pneumatic overload device.

If you're considering press equipment, remember . . . if you want maintenance-free quality—you want Warco.

Federal® WELDERS

Warco PRESSES ®

THE FEDERAL MACHINE AND WELDER COMPANY • WARREN, OHIO

ATLAS *all-steel*

TURNTABLES

BALL BEARING MOUNTED

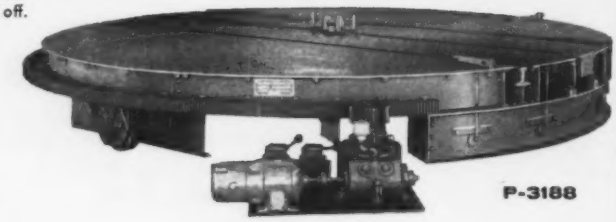
FLAT-TOP
Checkered safety top with or without latches. Standard to 96" diameter.

P-2777

FLUSH RAIL
Single or crossed track models, with latches and pit ring. Standard to 96" diameter. Also available with raised rails.

P-2805

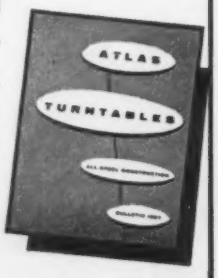
POWER-OPERATED
30-ton flush-rail, 16-foot diameter turntable designed for 90° power rotation. Power-operated mechanism moves cars on and off.



P-3188

Atlas welded, all-steel turntables are stronger, cost less than cast units. Standard sizes available to 96" diameter, but can be provided to any required size and capacity. New adjustable center bearing design reduces load on outer ball bearing raceways, greatly reducing effort needed to turn tables.

Request turntable bulletin for detail.



ATLAS CAR & MFG. CO.
1140 Ivanhoe Rd., Cleveland 10, Ohio

NEW EQUIPMENT

finishing. Vibration is produced by an eccentric-weighted motor underneath. (Roto-Finish Co.)

For more data circle No. 85 on postcard, p. 105

Cylindrical Grinder

The Myford MG 12 (English) cylindrical grinder combines precision with productive capacity. It has a capacity of 3 x 12 in. between centers and a swing of 5 in. Finishes to 3 microinches and repetitive accuracy to 0.0001 in. are readily ob-

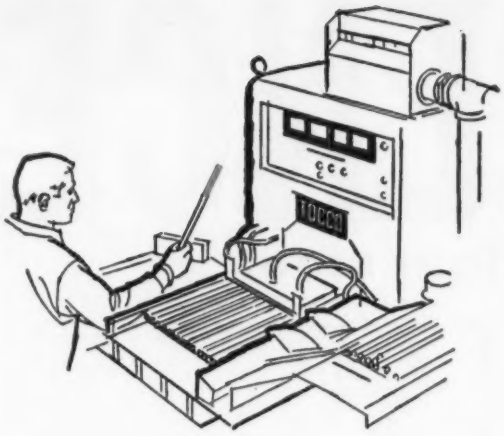
tainable, with a live spindle holding parallelism and roundness to millionths. Fine feed adjustments permit dead stops to 25 millionths. A fixed workhead is designed for utmost rigidity, and wheel and workhead spindles ride in heavy bearings. (Bentley Industrial Corp.)

For more data circle No. 86 on postcard, p. 105

NEW FILMS

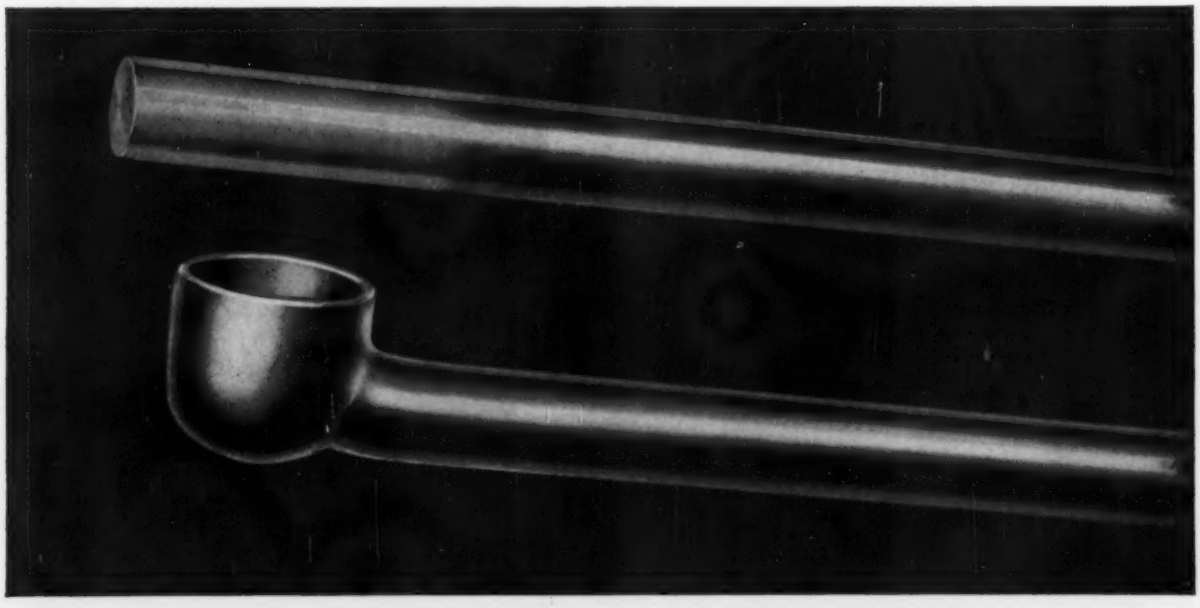
"Motors in the Making" shows, step by step, the processes in the manufacture of electric motors. 31 min. 16mm, color, sound. Wagner Electric Corp., St. Louis 33.

"A Talk With Mr. D" uses a lively Mike Wallace-type interview to show the vital but often misunderstood role of industrial distribution in the business economy, and shows how the distributor serves industrial buyer and supplier alike. 20 min. 16mm, color, sound. Standard Pressed Steel Co., Jenkintown, Pa.



Heating Costs *Cut In Half*

with TOCCO* *Induction Heating*



Engineers at Thompson Products Inc.'s Michigan Division recently changed from gas-fired furnaces to fully automatic TOCCO. Application: heating for forging of automotive tie rods. Result: a substantial reduction in direct labor costs, saving thousands of dollars a year on this heating for forging operation. *Annual savings actually amortize the cost of the TOCCO installation in about one year.*

The automotive tie rod shown here is only one of over 500 parts heated for forging in Thompson's new, modern forge plant. *Every one of these parts is heated with TOCCO equipment.*

If *your* manufacturing operations require heating for forging, heat treating, brazing, soldering or melting, it will pay you to investigate TOCCO as a sound method of increasing production and lowering costs.

THE OHIO CRANKSHAFT COMPANY

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Please send copy of "Typical Results of TOCCO Induction Heating for Forging and Forming".

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. . . for the right product

for 133 years

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The Iron Age Summary

Talks at Impasse; Squeeze Starts

It will take some unusual factor to bring a quick end to the steel strike.

Record June shipments eased supply picture, but squeeze is on and will tighten.

■ Steel labor talks have reached a complete impasse. And it may take direct intervention by President Eisenhower to break the stalemate.

Presidential intervention becomes more likely as the visit of Russia's Premier Khrushchev approaches. With the Premier scheduled to visit Pittsburgh in mid-September, it would be a severe blow to U. S. prestige if he came into a ghost-town atmosphere.

Unless some unusual factor enters the steel labor picture, it will be some time before a settlement is reached.

Market News—While the strike continues, with no early letup in sight, these market developments are noted:

Small steel users are beginning to feel the first effects of the strike. Even large companies that were unable to lay in large supplies of certain types of steel may have to close down some operations this month.

June a Record—The steel industry shipped 48.1 million tons of steel in the first six months, more than anyone thought possible. June tonnage was 9.7 million tons, nearly 1 million tons more than May, the previous record.

In addition to the record June shipments, about 400,000 tons of steel imports were received during the month. With consumption estimated at about 7 million tons, this means that more than 3 million tons went into inventories during the month.

Stocks Move Out — However, consumption continues more rapidly than anticipated, as the national economy refuses to show more than minor effects of the strike. These two developments of higher than anticipated stocks and consumption offset each other.

Meanwhile, the Defense Dept. is preparing to order setasides of steel for defense jobs from the 15 pct of the industry not shut down. There does not appear to be any immediate need, however. Mills that are operating report little increase in the use of defense priorities. Priority machinery is being set up "just in case."

Fourth Quarter Outlook — Orders are coming in to mills at a slow rate. This does not indicate any lack of post-strike business as mills have backlogs of two months on many products. These include bars, plates, sheets and structurals.

The auto industry, which is now beginning to shut down for 1960 model changes, is not using much steel at the moment. However, automakers indicate they will want heavy tonnages in the fourth quarter.

As the strike continues, the time it will take the industry to reach full production after a settlement continues to lengthen.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	332	318	1,089	1,632
Ingot Index				
(1947-1949=100)	20.7	19.8	67.8	101.6
Operating Rates				
Chicago	5.1	4.1*	36.0	71.0
Pittsburgh	3.0	3.0	22.0	53.0
Philadelphia	12.0	15.0	41.0	67.0
Valley	10.0	10.0	30.0	52.0
West	0.0	0.0	32.0	69.0
Cleveland	0.0	0.0	24.0	53.0
Detroit	24.0	24.0	33.0	67.0
Buffalo	0.0	0.0	105.0	54.0
South Ohio River	56.3	47.1*	83.0	72.0
South	12.5	9.0	81.5	53.5
Upper Ohio River	53.0	51.5*	63.0	77.0
St. Louis	83.0	70.0	90.0	68.0
Aggregate	12.0	12.2	38.5	60.5

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$39.83	$39.83	$39.17	$41.83
No. 2 bundles	$27.50	$27.33	$27.00	$29.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30.00	30.00	31.50	26.50
Lead, St. Louis	11.80	11.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	102.00	102.00	102.50	95.25
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

Press Price Increases Expected

Rising material costs will probably push press makers into price increases within the next few months.

Manufacturers are still offering short delivery on light press equipment.

▪ Press prices seem on the way up.

The reason: Increases in material costs which started in the second quarter. These are now being translated into actual price increases for both light and heavy press equipment.

Industry sources already comment there appear to be differences of as much as 10 pct in the prices of some types of equipment. In most cases the low side of the price range is the one moving upward.

Easing the Strain — Comments one press builder, "I don't know whether you could really call this a price increase or not. What we're actually doing is repairing the damage in our price structure caused by the hot competition of the last 18 months. I'd say we're just getting back to where we were 18 months ago."

Another adds, "We just got tired of building presses at cost. With the cost increase of the past few months, I don't think pressmakers can keep on offering equipment at those prices."

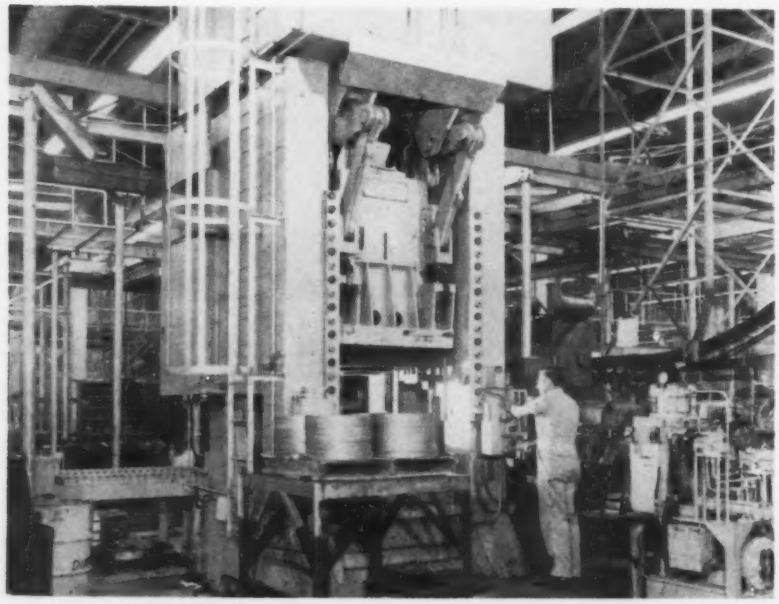
All the evidence indicates press prices will advance from 5 to 10 pct over the next few months. Buyers who figure to beat later price increases will probably not have too much trouble placing their orders.

Purchasers can place a press order early and quite probably beat some price advances that are sure to come in the third and fourth quarters. Some of the price increases are already here. But it's equally certain that buyers will not save any money by delaying purchases.

Delivery Rundown—Press manufacturers report backlogs of anywhere from 3 to 6 months. Nonetheless, most of them are offering light, off-the-shelf equipment on very short delivery. The steel strike hasn't affected deliveries a great deal. About the only slowdown has been in large, specialized equipment. The bind is being felt there first because of difficulty in obtaining large plate, in either heavy thicknesses or large widths. Large rounds have also been low in press builder inventories and will be another factor in slowdowns of heavy equipment deliveries over the next few months.

Sales Forecast — A few quick market forecasts suggest press sales will advance 10-15 pct over 1958 levels. June business was good. The current level of new inquiries is fairly high and customers don't seem to be letting the possibility of a long steel strike interfere with their plans for capital equipment expenditures.

Long-Range View—How about next year? One builder reports he's already counting 1960 sales dollars. His conclusion: We're in a new capital goods upswing and he's going to make greater gains in 1960 than he did in the 1959 upswing.



SALES OUTLOOK: Press builders are confident about both the short-term and long-range sales outlook for their products. (Photo from Cleveland Crane & Engineering Co.)

You just roll this sealer on! 3M Ribbon Sealer EC-1202

ROLL-ON RIBBON SEALER EC-1202 creates a uniform, economical, durable seal that shuts out water, dust and moisture.

It's easy to shut wind and weather out of mobile homes with 3M Sealer EC-1202. You just roll this synthetic rubber ribbon on, apply the next piece of metal . . . and fasten mechanically right through the sealer.

Because it's fabric-reinforced, EC-1202 holds its shape, doesn't stretch, sag or shrink. It applies just as easily along curved surfaces.

In mobile homes, this roll-on ribbon makes a weather-tight seal at lap seams and window beddings. And EC-1202 serves boats, curtain walls, commercial refrigeration, too. It's available in various widths and thicknesses direct from your local jobber.

SEE WHAT 3M ADHESIVES CAN DO FOR YOU! Consult 3M Research. Contact your 3M Field Engineer. Or for information and free literature write: A.C.&S. Division, 3M, Dept. SAQ-89, 900 Bush Ave., St. Paul 6, Minn.

ADHESIVES, COATINGS AND SEALERS DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY

. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

Record Shipments Built Stocks

■ Buildup of high steel inventories was made possible by record shipments of finished steel in the first half of 1959.

The American Iron and Steel Institute reports the record total of 48,156,396 net tons surpassed the previous first half record of 46,933,786 net tons shipped in 1956.

Product Records—In addition to setting a new record total, shipments of these individual categories set records in the first half:

Cold-rolled sheets, 8,847,498 tons

Hot-rolled sheets, 5,485,862 tons

Electrolytic tinplate, 3,510,124 tons

Galvanized sheets, 1,867,683 tons

Concrete reinforcing bars, 1,394,936 tons.

In contrast to the record-breaking shipments this year, total shipments in the first half of last year added up to only 28,699,218 tons.

Mills Now Operating

Company	Location	Ingot Capacity (tons)	Contract Expiration
ALABAMA			
Kilby Steel Co.	Anniston	34,020	*
Porter, H. K., Co., Inc.			
Connors Steel Div.	Birmingham	115,000	9/1/59
Southern Electric Steel Co.	Birmingham	66,000	8/31/59
ARIZONA			
Yuba Consolidated Industries, Inc.			
Western Rolling Mills Div.	Helena	60,000	*
CALIFORNIA			
Armco Steel Corp.	Torrance	50,000	*
Pacific States Steel Corp.	Niles	216,000	E
Southwest Steel Rolling Mills, Inc.	Los Angeles	45,000	E
CONNECTICUT			
Carpenter Steel Co.			
Carpenter Steel of New England, Inc.	Bridgeport	84,000	E
FLORIDA			
Florida Steel Corp.	Tampa	43,000	*
GEORGIA			
Atlantic Steel Co.	Atlanta	400,000	E
ILLINOIS			
Columbia Tool Steel Co.	Chicago Hgts.	6,600	*
Finkl, A., & Sons Co.	Chicago	33,600	*
Granite City Steel Co.	Granite City	1,440,000	E
International Harvester Co.			
Wisconsin Steel Works	S. Chicago	1,200,000	*
Keystone Steel and Wire Co.	Peoria	475,000	*
Laclede Steel Co.	Alton	600,000	8/31/59
INDIANA			
Borg-Warner Corp.			
Ingersoll Steel Div.	New Castle	64,000	*
Continental Steel Corp.	Kokomo	420,000	8/14/59
Joslyn Mfg. & Supply Co.	Chicago	37,500	8/14/59
KENTUCKY			
Jessop Steel Co.			
Green River Steel Corp.	Owensboro	183,190	E
MARYLAND			
Eastern Stainless Steel	Baltimore	80,000	E
MICHIGAN			
Allegheny Ludlum Steel Corp.	Ferndale	3,000	*
Ford Motor Co.	Dearborn	1,998,600	*
MISSISSIPPI			
Mississippi Steel Corp.	Flowood	45,000	*
NEW YORK			
Simonds Saw & Steel Co.	Lockport	21,600	8/31/59
Wickwire Bros., Inc.	Cortland	32,440	10/1/59
OHIO			
American Compressed Steel Corp.	Cincinnati	21,600	*
Armco Steel Corp.	Middletown	2,567,000	*
Copperweld Steel Co.	Warren	600,000	E
Detroit Steel Corp.	Portsmouth	1,500,000	E
Republic Industrial Corp.			
Industrial Forge & Steel, Inc.	Canton	84,000	8/31/59
Timken Roller Bearing Co.	Canton	700,000	8/24/59
Universal-Cyclops Steel Corp.			
Empire-Reeves Steel Corp.	Mansfield	500,000	8/31/59
OREGON			
Gilmore Steel & Supply Co., Inc. (Oregon Steel Mills)	Portland	150,000	E
PENNSYLVANIA			
Alan Wood Steel Co.	Conshohocken	800,000	**
Alco Products, Inc.	Latrobe	108,680	**
Armco Steel Corp.	Butler	557,000	*
Braeburn Steel Corp.	Tarentum	20,500	E
Baldwin-Lima-Hamilton Corp.			
Standard Steel Works Div.	Burnham	188,710	8/31/59
Carpenter Steel Co.	Reading	67,500	*
Edgewater Steel Co.	Oakmont	117,600	8/31/59
Erie Forge & Steel Corp.	Erie	284,000	8/31/59
Firth Sterling Steel Corp.	McKeesport	20,040	E
General Tire & Rubber Co.			E
Byers, A. M., Co.	Ambridge	90,000	8/31/59
Harsco Corp.			
Harrisburg Steel Co. Div.	Harrisburg	100,750	11/15/59
Heppenstall Co.	Pittsburgh	55,550	E
Heppenstall Co.			
Midvale-Heppenstall Co.	Philadelphia	157,700	*
Jessop Steel Co.	Washington	35,800	E
Latrobe Steel Co.	Latrobe	24,000	E
Merritt-Chapman & Scott Corp.			
Milton Steel Div.	Milton	90,000	11/30/59
Mesta Machine Co.	New Castle	66,000	*
Mesta Machine Co.	W. Homestead	105,000	*
National Forge & Ordnance Co.	Irvine	25,000	*
Pencoyd Steel & Forge Corp.	Philadelphia	15,600	5/19/60
Phoenix Steel Tube and Struct. Div.	Phoenixville	360,000	**
Phoenix Steel Plate Div.	Harrisburg	488,760	**
Union Electric Steel Corp.	Carnegie	25,000	E
Vanadium-Alloys Steel Co.	Latrobe	12,000	*
Vanadium-Alloys Steel Co.			
Colonial Steel Co. Div.	Monaca	30,000	E
Vulvan-Kidd Steel Div.	Aliquippa	9,600	E
RHODE ISLAND			
Washburn Wire Co.	Phillipsdale	93,000	10/15/59
TENNESSEE			
Knoxville Iron Co.	Knoxville	38,000	*
TEXAS			
Godfrey L. Cabot, Inc.			
Cabot Shops, Inc.	Pampa	16,200	*
Cameron Iron Works, Inc.	Houston	58,800	*
LeTourneau, R. G., Inc.	Longview	90,000	*
Lone Star Steel Co.	Lone Star (Daingerfield)	800,000	9/7/59
Texas Steel Co.	Ft. Worth	132,450	*
VIRGINIA			
Newport News Shipbuilding & Dry Dock Co.	Newport News	15,000	*
Roanoke Electric Steel Corp.	Roanoke	25,000	*
WASHINGTON			
Isaacson Iron Works, Inc.	Seattle	102,000	*
WEST VIRGINIA			
National Steel Corp.			
Weirton Steel Div.	Weirton	3,330,000	*
Porter, H. K. Co., Inc.	Huntington	110,500	4/30/60

E = Contract extended.
* = Not organized by USWA.
** = 30 days after U. S. Steel Agreement.

COMPARISON OF PRICES

(Effective Aug. 11, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Aug. 11 1959	Aug. 4 1959	July 14 1959	Aug. 12 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.32
Plates, wrought iron	13.55	13.55	13.55	13.55
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bars	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.188¢

	Aug. 11 1959	Aug. 4 1959	July 14 1959	Aug. 12 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.50	$43.50	$43.50	$44.50
No. 1 steel, Phila. area	39.50	39.50	39.50	37.50
No. 1 steel, Chicago	36.50	36.50	34.50	43.50
No. 1 bundles, Detroit	37.50	37.50	37.50	37.50
Low phos., Youngstown	44.50	44.50	44.50	46.00
No. 1 mach'y cast, Pittsburgh	52.50	52.50	51.50	51.50
No. 1 mach'y cast, Phila.	50.50	50.50	49.50	49.50
No. 1 mach'y cast, Chicago	59.50	59.50	59.50	52.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$39.83	$39.83	$39.17	$41.83
No. 2 bundles	27.50*	27.33	27.00	29.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	$15.38
Foundry coke, prompt	18.50	18.50	18.50	17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	31.50	26.50
Copper, Lake, Conn.	30.00	30.00	31.50	26.50
Tin, Straits, N. Y.	102.00†	102.00	102.50	95.25
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.80	11.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.80
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

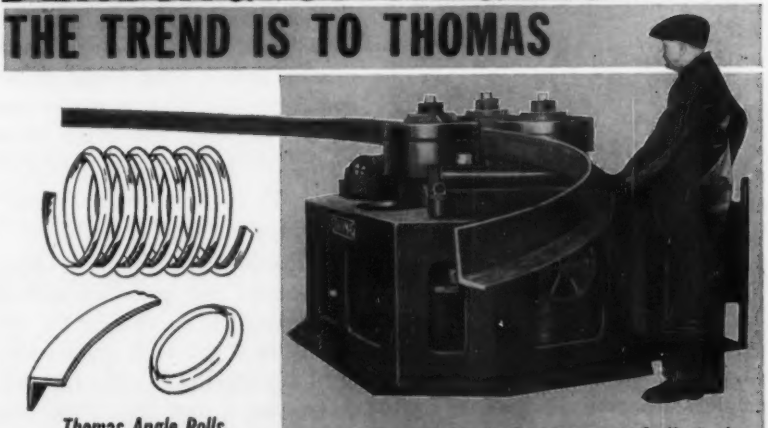
INDEX TO PRICE PAGES

Prices At a Glance 125
Comparison of Prices 129
Bars 141
Billets, Blooms and Slabs 139
Boiler Tubes 143
Bolts, Nuts, Rivets, Screws 144
Clad Steel 143
Coke 143
Electrical Sheets 143
Electrodes 143
Electroplating Supplies 144
Ferroalloys 148
Iron Ore 144
Merchant Wire Products 143
Metal Powders 144
Nonferrous
- Mill Products 136
- Primary Prices 129-134-136
- Remelted Metals 136
- Scrap 136

Piling 139
Pig Iron 146
Pipe and Tubing 142
Plates 141
Rails 143
Refractories 143
Service Center Prices 144
Shapes 139
Sheets 140
Spring Steel 143
Stainless 146
Steel Scrap 132
Strip 139
Structurals 139
Tinplate 140
Tool Steel 143
Track Supplies 143
Water Pipe Index 144
Wire 141
Wire Rod 140

FOR SEGMENT OR CIRCLE BENDING OF ANGLES

THE TREND IS TO THOMAS



Thomas Angle Rolls will handle angles up to 6 x 6 x 7/8"

Thomas Angle Benders are of all steel construction and come in two styles and four sizes. Standard rolls permit "leg in" and "leg out" bending of angles. The machines may be converted for bending flats, rounds, squares, beams, channels, pipe and other shapes.

THOMAS MACHINE MANUFACTURING CO.

PITTSBURGH 33, PA.

Write for Bulletin 314-A

Prices Remain Steady As Optimism Rules

Limited sales being made in the scrap market are generally at prevailing prices.

But if strike continues for several more weeks, price weakness may show up.

■ With the steel strike in its fourth week the scrap market is still holding firm.

The forces operating to keep prices steady remain the dominant factors. They include: Mill purchases for current or post-strike use at prevailing prices. A strong export market. Optimism among dealers that a buying surge will follow a strike settlement. Increased activity among foundries which has strengthened prices for cast grades.

Actual sales activity is at a reduced pace because of the strike. But the underlying strength of the market keeps The IRON AGE No. 1 heavy melting Composite unchanged from last week's level of $39.83. With the steel strike a month old, No. 1 heavy melting is still selling at about the same price range as in mid-July.

Length of the strike is one thing troubling dealers. If it should last beyond the end of August, there's concern about a scrap price break. In some market areas scrap is beginning to back up. But as yet this has not proved a problem.

Pittsburgh—There is little current or advance buying in this market area. Some outside districts are reporting heavy purchasing for post-strike delivery. Prices of most grades remain unchanged. Early railroad lists showed no significant price movement. One mill purchased No. 2 bundles for shipment after the strike. Price was the same as that paid earlier—$30. Cast grades are strong at current prices. Brokers indicate little low phos is being offered or sought.

Chicago—Despite the general absence of sales, the market remains exceptionally strong. Optimism among dealers is still dominant. Small isolated sales are bringing over-the-market prices.

Philadelphia — Market remains quiet, but firm. The mills still operating are purchasing at prevailing price levels. Purchases of No. 2 heavy melting lowered the spread on that grade to $34-$35. The spread on No. 2 bundles narrowed from $2 to $1 for a going price of $27-$28.

New York — Export sales are keeping the market alive for steelmaking grades. Pipe foundries remain a good market outlet for cast grades. Turnings are quiet. However, brokers and dealers insist they could not buy blast furnace grades for less than posted prices—as yet.

Detroit—Market continues strong and steady. But price weaknesses are expected to develop by the end of August if the mills remain idle. Most dealers feel a real crisis will come after Labor Day unless the strike is settled before then. Right now the sellers are running into difficulties in attempts to pile up scrap for the expected post-strike buying surge.

Cleveland — While dealers wait out the strike the market is treading water. Most sellers are living off foundry and nonferrous shipments while building up stocks. Scrap collections are low because of the poor market and plant vacations.

St. Louis—Market is strong with mill activity still high in this area. Demand for scrap continues outpacing supply. Dealers have some supplies on hand. However, special deals for out-of-the-area tonnages are being made. Prices remain unchanged, but market has a firm undertone. Last week several prices were misquoted. They should have read No. 1 dealer bundles up $2 to $39-$40; machine shop turnings up $1 to $15-$16; cupola cast up $2 to $54-$55; and rerolling rails up $1 to $58-$59.

Birmingham—There are no signs of weakness in the market. Prices are unchanged, except for No. 1 busheling which rose $2. Most grades are moving well except for No. 1 heavy melting and No. 2 bundles.

Cincinnati — Openhearth grades rebounded back $1 as dealers preferred to hold on to material rather than ship at the new prices offered. Scrap collections are off due to plant vacation shutdowns. Market is generally just marking time.

Buffalo — Market remains quiet with dealers waiting out the strike. The only activity was small sales of cast scrap to foundries at previously quoted prices.

Boston—There's just enough activity in the market to keep prices stable. Some domestic and a little export scrap is moving. However the flow is not enough to disturb prices.

West Coast — Prices are steady. The market is quiet in San Francisco, Los Angeles, and Seattle. The flow of scrap is good under present conditions.

Houston—The domestic market remains relatively inactive. Export sales continue holding the upper hand. Exporters are still quoting prices for mill grades about $1 to $4 a ton above domestic prices.

Protecting downcomers with a heat-resistant concrete lining made with **Atlas Lumnite Cement**

A heat-resistant concrete lining, being gunited in place, solves the problem of abrasion in this blast-furnace downcomer system. Made with Lumnite calcium-aluminate cement and aggregates, this smooth, jointless concrete lining will withstand the abrasive attack of particles in the gas stream — extending the life of the steel structure.

In new installations or repairs, monolithic linings are easily and economically placed — by guniting, casting or troweling. Unit downtime is reduced because concrete reaches service strength in 24 hours.

Other applications in blast-furnace systems include foundation pads, blast main linings, stove domes and other areas where resistance to heat and corrosion are required.

For convenience, castables bonded with Lumnite cement are available from leading manufacturers of refractories. These are packaged mixtures, ready for use by adding only water. For more information, write Universal Atlas, 100 Park Avenue, New York 17, New York.

"USS," "Atlas" and "Lumnite" are registered trademarks L-186

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Division of
United States Steel

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SCRAP PRICES *(Effective Aug. 11, 1959)*

Pittsburgh

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	47.00 to 48.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	52.00 to 53.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	36.00 to 37.00
No. 1 factory bundles	42.00 to 43.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Low phos. forge crops	50.00 to 51.00
Low phos. punch'gs plate, ¼ in. and heavier	47.00 to 48.00
Low phos. 2 ft and under	45.00 to 46.00
No. 1 RR hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	51.00 to 52.00
Rerolling rails	61.00 to 62.00
Rails 2 ft and under	56.00 to 57.00
Angles and splice bars	52.00 to 53.00
RR steel car axles	66.00 to 67.00
RR couplers and knuckles	50.00 to 51.00
No. 1 machinery cast.	59.00 to 60.00
Cupola cast.	52.00 to 53.00
Cast iron wheels	44.00 to 45.00
Malleable	60.00 to 61.00
Stove plate	50.00 to 51.00
Steel car wheels	49.00 to 50.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'gs	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	33.00 to 34.00
RR specialties	44.00 to 45.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	44.00 to 45.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	50.00 to 51.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.50 to $35.50
No. 2 hvy. melting	28.50 to 29.50
No. 1 dealer bundles	34.50 to 35.50
No. 2 bundles	25.50 to 26.50
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	17.00 to 18.00
Low phos. 18 in. and under	43.00 to 44.00
Rails, random length	48.00 to 49.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	46.00 to 47.00
Hvy. breakable cast.	43.00 to 44.00
Drop broken cast.	53.00 to 54.00

Youngstown

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	27.50 to 28.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	44.00 to 45.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$39.50 to $40.50
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	39.50 to 40.50
No. 1 factory bundles	44.50 to 45.50
No. 2 bundles	24.00 to 25.00
No. 1 busheling	39.50 to 40.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	46.00 to 47.00
Drop forge flashings	39.50 to 40.50
Low phos. punch'gs plate	40.50 to 41.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	54.00 to 55.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	115.00 to 120.00

Buffalo

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	19.00 to 20.00
No. 1 RR hvy. melting	40.00 to 41.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	45.00 to 46.00
RR specialties	46.00 to 47.00
Cupola cast.	54.00 to 55.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	58.00 to 59.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	38.00 to 39.00
Elec. furnace, 3 ft & under	36.00 to 37.00
Bar crops and plate	44.00 to 45.00
Structural and plate, 2 ft.	43.00 to 44.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	57.00 to 58.00
No. 1 cupola cast.	55.00 to 56.00
Stove plate	55.00 to 56.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	35.00 to 36.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	44.00 to 45.00
Automotive cast.	50.00 to 51.00
Stainless	
18-8 bundles and solids	190.00 to 200.00
18-8 turnings	80.00 to 90.00
430 bundles and solids	85.00 to 95.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	28.00 to 29.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	28.00 to 29.00
Machine shop turn.	8.50 to 9.00
Shoveling turnings	10.50 to 11.00
Clean cast. chem. borings	16.50 to 17.00
No. 1 machinery cast.	35.00 to 36.00
Mixed cupola cast.	36.00 to 37.00
Heavy breakable cast.	32.00 to 33.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	....	$36.00
No. 2 hvy. melting	....	33.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	....	22.00
Machine shop turn.	....	17.00
Cast iron borings	....	17.00
No. 1 cupola cast.	....	47.00

Los Angeles

No. 1 hvy. melting	....	$38.00
No. 2 hvy. melting	....	36.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	$18.00 to	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	18.00
Cast iron borings	....	18.00
Elec. furn. 1 ft and under (foundry)	$47.00 to	48.00
No. 1 cupola cast.	....	45.00

Seattle

No. 1 hvy. melting	....	$35.00
No. 2 hvy. melting	....	33.00
No. 2 bundles	....	22.00
No. 1 cupola cast.	....	36.00
Mixed yard cast.	....	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$32.25
No. 2 hvy. melting	....	28.25
No. 1 dealer bundles	....	32.25
No. 2 bundles	....	22.75
Mixed steel scrap	....	24.25
Bush., new fact., prep'd	....	32.25
Bush., new fact., unprep'd	....	26.25
Machine shop turn.	....	14.00
Short steel turn.	....	17.00
Mixed bor. and turn.	....	13.00
Rails, rerolling	....	37.00
Cast scrap	$46.50 to	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$34.00
No. 2 hvy. melting	....	31.00
No. 2 bundles	....	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	20.00
Cut structural plate 2 ft & under	$45.00 to	46.00
Unstripped motor blocks	38.50 to	39.50
Cupola cast.	46.00 to	47.00
Heavy breakable cast.	28.00 to	29.00

Earth Movers

Ancient Egypt and Assyria used back-breaking labor to dig canals long before the Christian Era. Leading from the gates of Rome to Capua, the Appian Way was started by Appius Claudius about 312 B.C. In the thirteenth century, the 650-mile Grand Canal from the Yang-tse-kiang to the Pei-ho was constructed by the Chinese. The Mont Cenis tunnel, first through the Alps, was completed in 1870. 135,000,000 cubic yards of dirt and rock were removed to clear the Panama Canal.

Today's great power-driven equipment multiply a thousand fold the picks, shovels and human muscle of just a few decades ago. Irrigation, drainage, canals, tunnels—and America's vast new road building program — all are "must" demands for earth-moving machines. To meet these and a thousand other requirements for steel, America's mills must be assured an unfailing supply of scrap.

For the purchase or sale of iron or steel scrap . . .

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Did USWA Fumble Copper Offer?

Now that Kennecott's offer has been turned down, others in the industry admit they would not have gone that far.

The copper industry may now be in for a long, bitter strike.

▪ The United Steelworkers may have dropped the ball when they turned down the Kennecott Copper Co. offer to the Steelworkers at the Garfield, Utah, refinery and smelter.

By early this week, Kennecott's entire western operations were closed down by strikes of the Steelworkers and the Mine, Mill and Smelter Workers.

Missed Chances — By accepting the offer, the Steelworkers could have:

1. Obtained a formidable wedge with which to pry at a steel settlement;

2. Severely weakened the dominant copper union, the Mine, Mill, Smelter Workers;

3. Possibly split the copper industry.

Kennecott had offered Garfield USW a two-year, 17.9¢ per hour package. About 5¢ per year was for wage increases, the rest in fringe benefits.

Offer Too High?—The offer was made and turned down so quickly that this significance escaped notice from much of business. But it is now apparent that a large part of the copper industry thought the Kennecott offer was too high.

The Steelworkers now may not get another chance to turn it down if the industry forms a united front.

The spokesman for one company said, "They can afford to pay that, but we can't." He inferred his company would have balked at offering the same settlement to Mine, Mill which represents the bulk of its workers.

Can Do Better — An executive for another copper company said the Kennecott offer was "unexpected." He inferred that his company would do better in its talks with Mine, Mill.

While Kennecott made a firm offer to USWA, the company has not made the offer to Mine, Mill. Nor has anyone, officially. The trade generally agrees that this is because all want to see what happens in the steel industry first.

Touched Off — Mine, Mill had been rolling along, working without a contract, since June 30, apparently content to wait and see—until late last week. A routine suspension of a worker in Kennecott's Silver City, N. M., operation touched off a wildcat walkout that closed that plant. By Monday the entire western U. S. Kennecott operation was closed down.

Mine, Mill issued a deadline of Aug. 20. No settlement, no work. The trade that only a few weeks before was confident of labor peace is now betting on a series of strikes against all major companies.

It won't hurt consumers—not for a while. Consumers are up to their ears in copper. Everyone has at least 30 days. Some have 60-days inventory on hand. Then too, many copper fabrications combine the metal in one way or other with steel in finished products. All the copper in the world won't do any good without steel. If steel doesn't settle before inventories run out, copper buying will tail off sharply.

Aluminum

June net shipments of sheet and plate were best for any month this year, reports the Aluminum Assn. It makes the second quarter and the entire first half look good.

The industry has been gaining steadily, sometimes spectacularly, since the beginning of the year. Sheet and plate shipments have grown from 103 million lb in January to 163 million lb in June.

The total for the first quarter was 337 million lb, the second quarter was 447 million lb, for a first half total of 784 million lb.

Normally, July is the vacation month and shipments sag sharply. This may not be the case this year because the threat of a strike loomed large until late in the month.

However the industry expects this burst to be reflected in lower shipments in August and September.

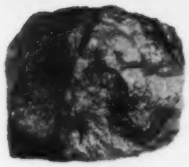
Tin prices for the week: Aug. 5—101.75; Aug. 6—101.75; Aug. 7—101.625; Aug. 10—101.50; Aug. 11—101.50.*

* Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	30.00	31.50	7/13/59
Copper (CS)	30.00	29.50	8/7/59
Copper (L)	30.00	31.50	7/13/59
Lead, St. L.	11.80	11.30	5/7/59
Lead, N. Y.	12.00	11.50	5/7/59
Magnesium ingot	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/56
Titanium sponge	150-160	162-182	8/1/59
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/58

ALUMINUM: 99% Ingot COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; **Other primary prices, pg. 136.**



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MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250-3.
1100, 3003	45.7	43.8	42.8	42.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	⅝-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.13	.....	51.36	54.32
Brass, Yellow	47.24	47.78	47.18	50.65
Brass, Low	50.03	50.57	49.97	53.34
Brass, R L	51.02	51.56	50.96	54.33
Brass, Naval	51.90	.....	45.71	55.31
Muntz Metal	49.95	.....	45.26	.....
Comm. Bz.	52.55	53.09	52.49	55.61
Mang. Bz.	55.64	.....	49.30	.....
Phos. Bz. 5%	73.92	.....	74.42	.....

Free Cutting Brass Rod 31.81

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.75-$6.25; alloy, $7.75-$10.00; Bar, HR or forged, commercially pure, $4.25-$5.00; alloy, $4.25-$7.50; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.30
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb) ... $1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 33.30 to 42.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz..... $75 to $85
Lithium, 98% ..... $11.00 to $14.00
Magnesium sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $234 to $236
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $18 to $20
Platinum, dollars per troy oz... $77 to $80
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 29.25
- No. 120 ..... 28.00
- No. 123 ..... 27.00

80-10-10 ingot
- No. 305 ..... 33.50
- No. 315 ..... 31.50

88-10-2 ingot
- No. 210 ..... 42.00
- No. 215 ..... 37.75
- No. 245 ..... 33.50

Yellow ingot
- No. 405 ..... 23.75

Manganese bronze
- No. 421 ..... 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 25.00-25.25
- 0.60 copper max. 24.75-25.00

Piston alloys (No. 122 type)..26.75-27.75
No. 12 alum. (No. 2 grade)...23.50-24.00
108 alloy 24.00-24.50
195 alloy 26.50-27.50
13 alloy (0.60 copper max.)...24.75-25.00
AXS-679 (1 pct zinc) 23.75-24.75

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 24.00-25.00
Grade 2—92-95% 22.75-23.75
Grade 3—90-92% 21.75-22.75
Grade 4—85-90% 21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19⅝	17¾
Red brass	22⅞	22⅛
Comm. bronze	23⅞	23⅛
Mang. bronze	18⅝	17½
Free cutting rod ends.	18¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26
No. 2 copper wire	24½
Light copper	22¼
*Refinery brass	24
Copper bearing material	23

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26
No. 2 copper wire	24½
Light copper	22¼
No. 1 composition	21
No. 1 comp. turnings	20½
Hvy. yellow brass solids	14½
Brass pipe	15½
Radiators	16

Aluminum

Mixed old cast	14 —15
Mixed new clips	16 —17
Mixed turnings, dry	14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	23 —23½
No. 2 copper wire	21 —21½
Light copper	19 —19½
Auto radiators (unsweated)	13¼—13¾
No. 1 composition	17½—18
No. 1 composition turnings	16 —16½
Cocks and faucets	13½—14
Clean heavy yellow brass	12 —12¼
Brass pipe	13½—14
New soft brass clippings	14 —14½
No. 1 brass rod turnings	11¼—11¾

Aluminum

Alum. pistons and struts	7½— 8
Aluminum crankcase	11¼—11¾
1100 (2s) aluminum clippings	15 —15½
Old sheet and utensils	11¼—11¾
Borings and turnings	7 — 7½
Industrial castings	11½—11¾
2020 (24S) clippings	12½—13

Zinc

New zinc clippings	4¾— 5¼
Old zinc	3¼— 3½
Zinc routings	2 — 2¼
Old die cast scrap	1¾— 2

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	37-40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	30-32
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

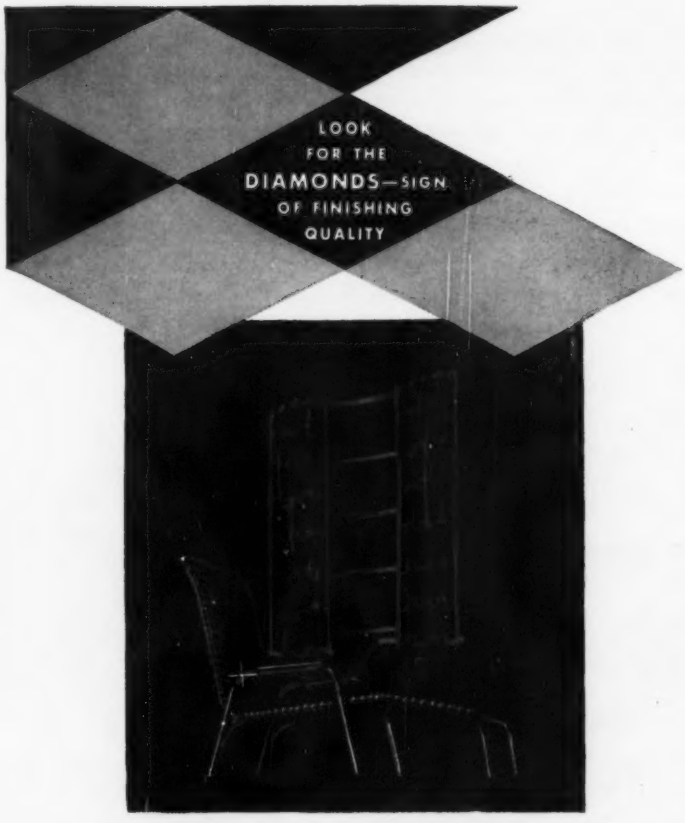
Lead

Soft scrap lead	7 — 7¼
Battery plates (dry)	2 — 2¼
Batteries, acid free	1⅞— 2⅛

Miscellaneous

Block tin	77 —78
No. 1 pewter	59 —60
Auto babbitt	40 —41
Mixer common babbitt	9½—10
Solder joints	13¾—13¾
Siphon tops	42
Small foundry type	9½—10
Monotype	9½—10
Lino. and stereotype	8½— 9
Electrotype	7 — 7½
Hand picked type shells	5¼— 5⅝
Lino. and stereo. dross	2¼— 2⅝
Electro dross	2¼— 2⅝

(Effective Aug. 10, 1959)



NOW—A Great New Combination for DOUBLE PROTECTION Against Corrosive Conditions on Aluminum, Magnesium or Zinc

IRIDITE®

CHROMATE CONVERSION COATINGS

and

IRILAC™

CLEAR PROTECTIVE COATINGS

Now, here's a fast, easy, economical way to almost double the protection against corrosion on your product. Simply follow up the IRIDITE process with a fast, easy application of IRILAC . . . and you've given your product extra protection for longer resistance to corrosive conditions, longer shelf or storage life protection from handling, and increased beauty for more attractive appearance and faster sales.

ON ALUMINUM

An IRIDITE-IRILAC finish will provide longer life for storm doors, windows, outdoor furniture, auto parts and accessories, tubing or wire goods. And, you have a choice of color finishes such as natural aluminum and golden yellow. Other colors may be obtained by an additional dye operation.

ON MAGNESIUM

IRILAC over an IRIDITE No. 15 finish increases corrosion protection, and provides resistance to finger printing and abrasion on all types of products, with color appearance ranging from light to dark brown.

ON ZINC

IRIDITE plus IRILAC gives your product longer life and brighter appearance. Color choices range from clear IRIDITE to olive drab, plus colored dye finishes.

IRIDITE is the tradename for a specialized line of chromate conversion coatings that can be applied to any non-ferrous metal by brush, dip or spray methods—at room temperatures—manually or with automatic equipment. Upon application, a thin film forms which becomes an integral part of the metal itself, and thus cannot chip, flake or peel. No special equipment, exhaust systems or specially trained personnel are required.

IRILAC is the tradename for a line of clear protective coatings for all metals. As safe and easy to handle as water, they may be applied by brush, dip or spray methods. No exhaust or special fire protection equipment required. Adds protection and abrasion resistance to any base metal, plated part or parts treated with electrolytic or chemical post treatments, without chemical change.

For complete technical information on IRIDITE Chromate Conversion Coatings or IRILAC Clear Protective Coatings, write for FREE TECHNICAL MANUAL. Or, see the Allied Field Engineer in your area. He's listed under "Plating Supplies" in the yellow pages.

Allied Research Products, Inc.

4004-06 EAST MONUMENT STREET • BALTIMORE 5, MARYLAND
BRANCH PLANT: 400 MIDLAND AVENUE • DETROIT 3, MICHIGAN
West Coast Licensee for Process Chemicals: L. H. Butcher Co.

Chemical and Electrochemical Processes, Anodes, Rectifiers Equipment, and Supplies for Metal Finishing

IRIDITE® Chromate Coatings	IRILAC™ Clear Coatings	ISOBRITE® Plating Brighteners	ARP® Chemicals & Supplies	WAGNER Line of Equipment

TV cameras, transmitters and receivers, punched card programming, electronic brains . . . Inland's new 46" Universal automatic slabbing mill is a far cry from the mills of yesteryear. At his fingertips, today's mill operator—Inland Slabber . . . 1959—has power and precision control never before achieved. Currently fed from six soaking pit batteries, this giant, new slabbing mill operates at a capacity of 1,800,000 tons per year. As primary and finishing capacity grows in response to Inland's continuous plan for expansion, this mill, built with an eye to future requirements, can draw upon more than three times as many soaking pits—step-up its capacity to a tremendous 4,000,000 tons. For soaring mid-western industry, this means an always dependable source—producing more uniform steel of highest metallurgical quality, at ever-increasing speed.

Building Today, With an Eye to Tomorrow

INLAND SLABBER . . . 1959

INLAND STEEL COMPANY
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JOSEPH T. RYERSON & SON, INC.
INLAND STEEL PRODUCTS COMPANY
INLAND STEEL CONTAINER COMPANY*
INLAND LIME & STONE COMPANY* *Division

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	6.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	6.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	6.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	6.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	6.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	6.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W5*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			6.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	6.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	6.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	6.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	6.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	6.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	6.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	6.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	6.15 *S2*						8.65 *S2*	

(Effective Aug. 10, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75 lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *a2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A9*	6.275 *A9*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

* Electrogalvanized sheets.

(Effective Aug. 10, 1959)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Aug. 10, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B.. Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., New Castle, Ind.
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Chicago, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Youngstown *R3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fontana *K1*	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	0.75	+15.50								
Pittsburgh *J3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Alton, Ill. *L1*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Sharon *M3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fairless *N2*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Pittsburgh *N1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Wheeling *W5*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Wheatland *W4*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Youngstown *Y1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Indiana Harbor *Y1*	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50								
Lorain *N2*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Youngstown *R3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Fontana *K1*	+6.25		+2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Alton, Ill. *L1*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Sharon *M3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Wheeling *W5*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Indiana Harbor *Y1*	5.75	+8.0	9.75	+4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50								
Lorain *N2*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective Aug. 10, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium..					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.15; 1 side, 36.20.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective Aug. 10, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4*****	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	17.	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
SparrowsPt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Chicago	.....	.....	.....	15.60	.....
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1⅛" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.

	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

C. P. Hex, reg. & hvy.

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	41

Semi-finished Hex Nuts

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 35 pct for broken case or keg quantities)

Finished

⅞ in. and smaller	65

Rivets

Base per 100 lb

½ in. and larger	$12.85

Pct. Off List

7/16 in. and smaller	15

Cap Screws

Discount (Packages)

Full Finished H. C. Heat Treat

	Full Case
New std. hex head, packaged	
⅝" diam. and smaller x 6" and shorter	54
¾", ⅞", and 1" diam. x 6" and shorter	38
⅝" diam. and smaller x longer than 6"	..
¾", ⅞", and 1" diam. x longer than 6"	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ½" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅝" diam. & smaller 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	37.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	17.50
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium, 5000 lb	1.20
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

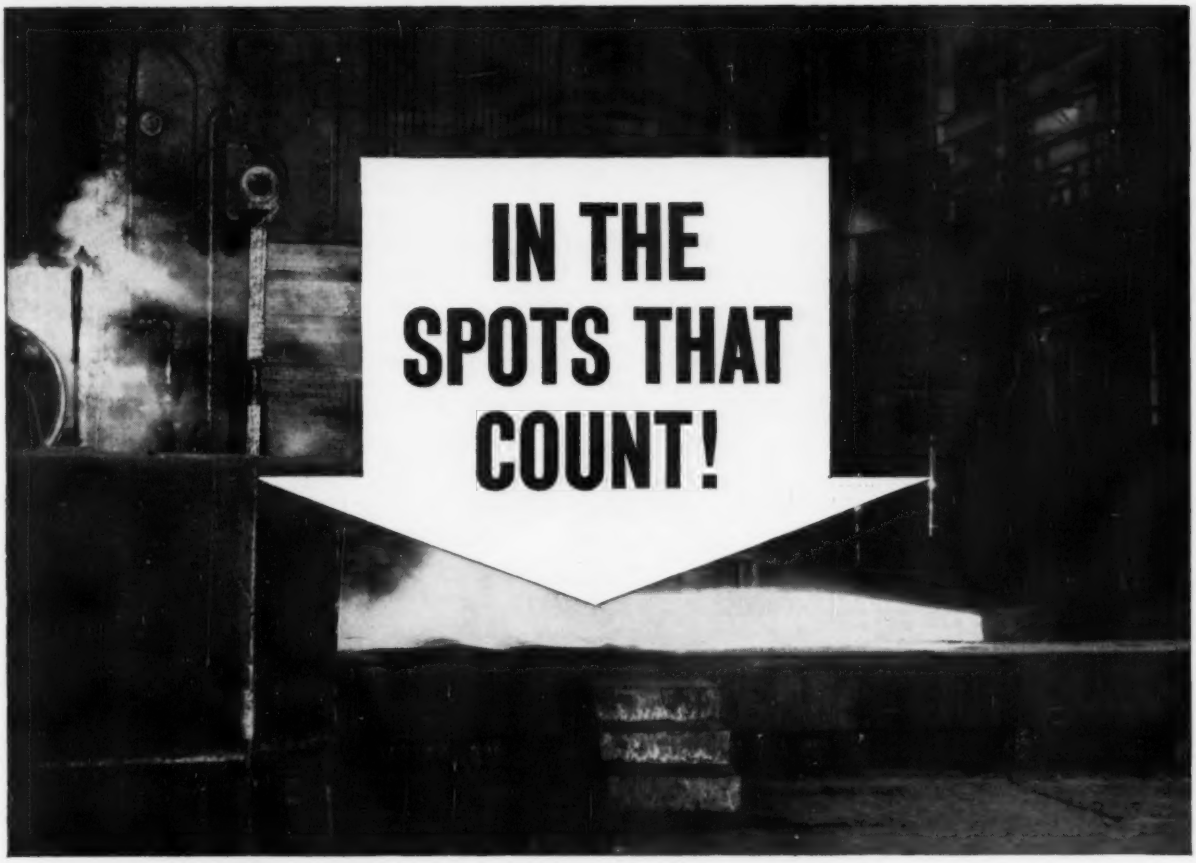
Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*	.....	.....	.....	.....
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99	.....	.....	.....	.....	.....
Boston**	.10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45*	16.79	16.69	20.29	21.04
Buffalo**	.15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60*	16.34	16.45	19.01	20.80
Chicago**	.15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	16.20	16.10	19.70	20.45
Cincinnati**	.15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68*	16.52	16.42	20.02	20.77
Cleveland**	.15	8.62[1]	9.61	11.02	10.36	8.76	9.63	9.36	11.40*	16.31	16.21	19.81	20.56
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit**	.15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	15.46	16.38	18.81	21.03
Houston		8.10	8.60	.....	8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**		9.95[1]	11.55	12.20	11.55	10.00	10.00	9.10	14.20	17.30	16.45	21.30	20.80
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12.11*	.....	.....	.....	.....
Milwaukee**	.15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	16.34	15.34	19.84	19.09
New York**	.10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35*	16.16	16.50	20.10	20.85
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia**	.10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05*	16.58	16.48	20.08	20.83
Pittsburgh**	.15	8.62	9.61	10.95	10.36	8.52	9.24	8.62	11.40*	16.20	16.10	19.70	20.45
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25
San Francisco**	.10	11.00	11.95[2]	11.50	12.25	11.00	10.95	10.75	15.20	17.05	16.35	21.05	20.60
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	17.15	17.80	20.65	22.20
Spokane**	.15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.55	22.35
St. Louis**	.15	9.07	10.73	11.02	10.73	9.00	9.76	9.17	11.43	16.58	16.48	20.08	19.33
St. Paul	.15	8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49	.....	15.41	.....	20.83

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—¼" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—⅝-2 15/16; * C 1018—1" rounds.

†† 10¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter.

(Effective Aug. 10, 1959)



split-second control with Homestead® Operating Valves keeps steel plate rolling!

Solenoid-hydraulic pilot controlled 4" and 2½" Hydro-Cushion Homestead Operating Valves; and Lever-Seald Hydraulic Stop Valves; 800 pounds working pressure.

Six days a week, twenty-four hours a day, 250 times an hour, the tilt tables and middle roll of an East Coast Plate Mill are exactly positioned without shock, and held without creepage, by Homestead Operating Valves. This precision control has permitted record-breaking rolling of the hot steel slabs into plate.

Through more than *three and one-half million* split-second rollings during the two years the 2½" and 4" Hydro-Cushion Homestead Operating Valves have been in service, not one shutdown has been required for valve maintenance! Performance records such as these, are assured by the protected seat and cushioning action of the Homestead Valves.

For any hydraulic control problem, there is a Homestead Operating Valve to meet your needs. Send today for Reference Book 39-6.

Please send Reference Book 39-6 and prices on all types of Homestead Operating Valves. 23

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

hv

HOMESTEAD VALVE MANUFACTURING COMPANY
P. O. Box 23, Coraopolis, Pennsylvania

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Kookuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

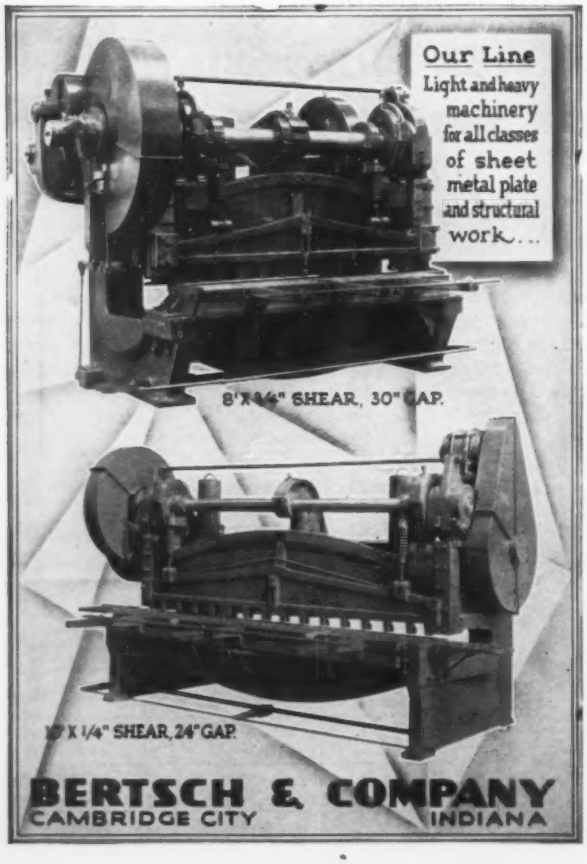
Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa., *C2.*

(Effective Aug. 10, 1959)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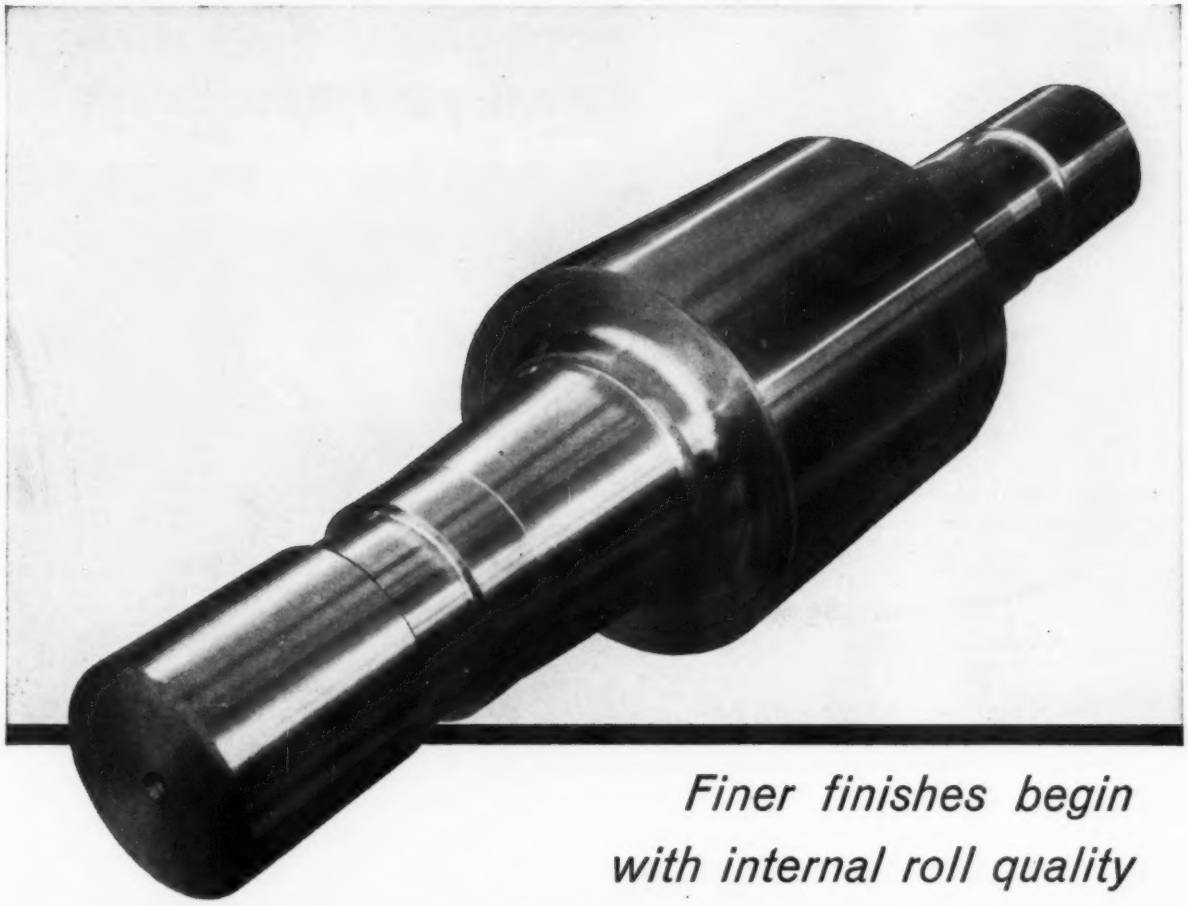

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R.-24-58

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FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 37.25
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 39.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.

0.10% max. C	$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe...	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.

Carloads	$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.)
Carloads, delivered, lump, 3-in. x down, packed.
Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Ca, 60-65% Si, 3.00 max. Fe.

Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload bulk	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:

Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% (Bulk) P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.

Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 2000 lb up to carloads	17.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	22.45	21.25
98% Si, 1.0% Fe	21.95	20.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.

Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots .....$	2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Aug. 10, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 58-62% Cb, 2 in. x D, delivered per pound

Ton lots	$3.45
Less ton lots.....	3.50

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ten lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy

35-40% del'd, carloads, bulk..	26.25¢
12-15%, del'd lump, bulk-carloads	9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound	45¢
Less ton lots, per pound	50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots... $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B	.85
14 to 19%	1.20
19% min. B	1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over

No. 1	$1.05
No. 79	50¢

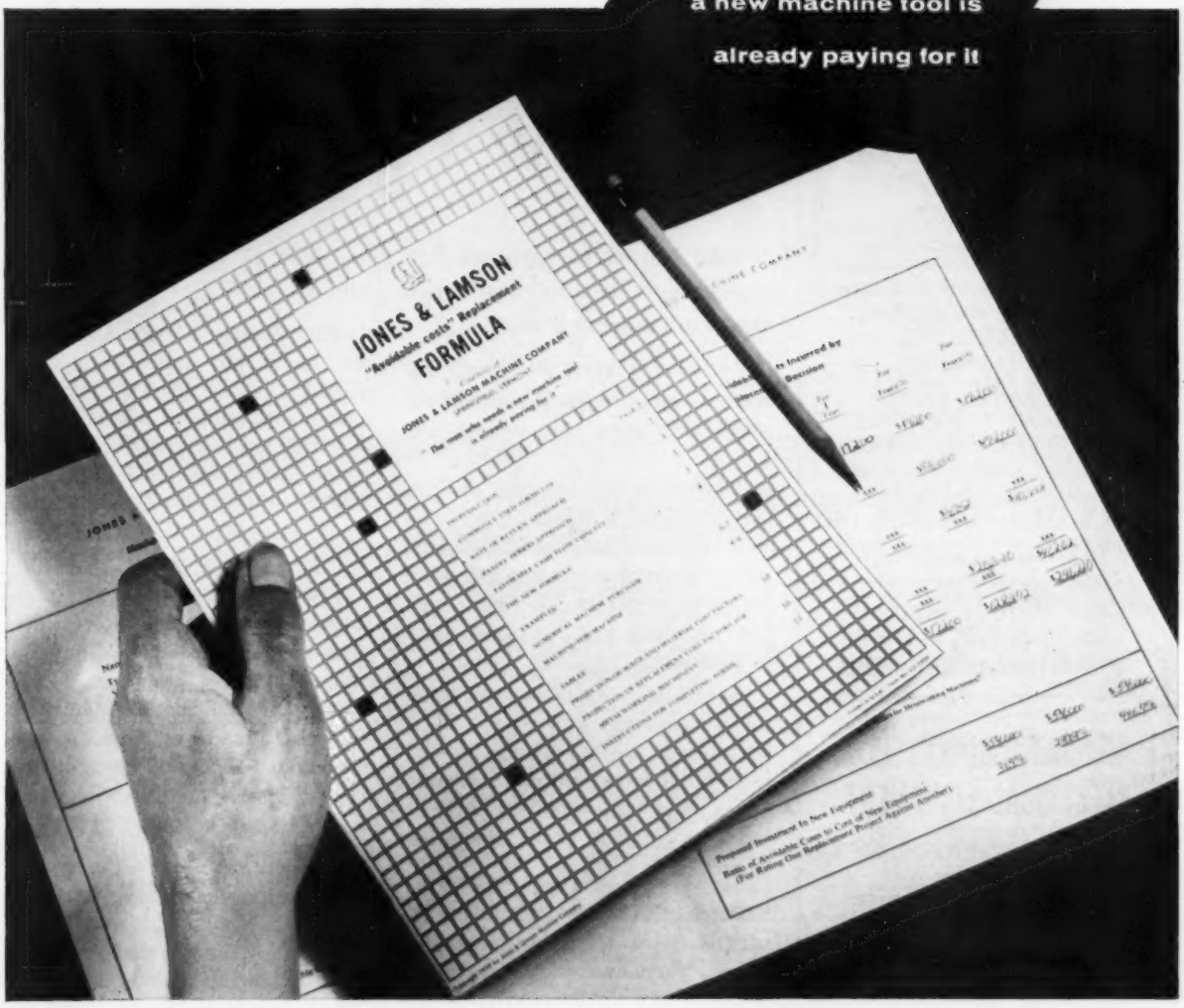
Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

JONES & LAMSON MACHINE COMPANY

the man who needs a new machine tool is already paying for it



How to get Equipment Dollars from Management

To management men, nothing speaks so eloquently as facts. Take the men in *your* front office, for instance. When told that a new machine tool (or several new ones) is a "must", they may very well be inclined to agree. But they have to be *shown*.

In order to sell management, you must present an accurate, factual statement, comparing current productivity of existing equipment, with the productivity attainable with new, advanced equipment.

And this is where you must exercise extreme caution.

Why?

Because, practically without exception, the formulas commonly used for evaluating machine tool performance contain flaws, fallacies and limitations which are seriously misleading. They give an erroneous picture because they distort the facts.

Happily, J & L has the answer to this problem. It's the new J & L "Avoidable Costs" Replacement Formula, which gives you an easy, step-by-step method of productivity evaluation which is logical, accurate and reliable. This formula is tried and true. It gives you a clear, true picture and supplies you with the facts you need in order to get that new machine you're looking for.

For your copy of J & L's "Avoidable Costs" Replacement Formula, together with easy-to-use work sheets, write Jones & Lamson Machine Company, 511 Clinton Street, Springfield, Vermont.

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(3)—3500-KW Allis-Chalmers 5-unit sets consist of (2) 1750-KW Gen 350/700-VDC, (1) 5000-HP syn. motor, 13800/6900/4160-V, 3 hp., 60 cy., (2) exciter generators.

(1)—S. & S. 5-unit set consists of—(1) 2500-HP syn. motor, 11000/4160-V., 3 ph., 60 cy., (1) 1060-KW Gen. 600-VDC, (2) 760-KW Gen. 600-VDC, (1) exciter gen. (Will split this set to fit your requirements).

(1)—200-KW Set consisting of (2) 1000-KW gen. 600-VDC, (1) 2500-HP syn. motor, 11000/-4160-V., 3 ph., 60 cy.

(1)—1875-KW Whse. 2-unit set—(1) 250-VDC gen., (1) 2700-HP syn. motor, 13800/6900-4160-V., 3 ph., 60 cy.

(1)—1250-KW Gen. Elec., 2-unit set—(1) 132/265-VDC gen., (1) 1750-HP syn. motor, 4160-V., 3 ph., 60 cy.

(1)—850-KW Gen. Elec. 2-unit set—(1) 250/300-VDC gen., (1) 1250-HP syn. motor, 13800/-6900/4160-V., 3 ph., 60 cy.

MOTORS

(1)—2200 H.P. Westinghouse motor, 600 VDC., 92/132 R.P.M.

(2)—600 HP. Allis Chalmers Motors, 600 VDC, 300/600 R.P.M.

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Summer Sales Good At New York

Used machinery sales are not making any seasonal dip in the New York market area.

Business is brisk in almost all lines of equipment. Construction machinery is in strong demand.

■ Used machinery sales in the New York area are blooming this summer. Dealers are virtually unanimous in reporting continued good business in almost all lines, with both inquiries and completed sales at high levels.

Emphasis is on late-model tools in all categories, with special stress on medium and heavy capacity and high production items. Some dealers report a little difficulty in finding the models and capacities wanted.

Popular Sellers — Construction machinery of all kinds, including shears, press brakes, and bending rolls, continue tight. Demand has been almost chronic in this area for the past year at least.

Cranes, however, scarce items a few months ago, are now in better supply following recent sales and demolitions. One dealer singled out heavy press brakes and large boring mills as particularly hard to find.

Building Helps—Demand comes from virtually all segments of metalworking in the area. The summer construction upsurge is, of course, a major factor, as are healthy operations in sub-contracting shops, heavily represented in the New York area. The buying does not appear to represent formal plant expansion so much as it does quick purchase of machines needed on specific jobs.

Fast Delivery Wanted—Bearing this out is the emphasis on quick delivery. Many buyers apparently anticipated the need for tools some time ago, judging by the number of long-standing inquiries that are finally turning into sales. In a few cases, customers waited too long, are now having trouble finding the machines they want.

Prices are firm, but most dealers discount the possibility of any significant rise in the near future. They point out present buying is for jobs already in hand. So customers will resist any upward pressure which would distort their own cost estimates.

Reasons for Hope—Dealers are hopeful the high sales level will continue. They emphasize it will take some little while to satisfy existing demand, and they hope for additional buying for plant expansion. This, they believe, is overdue, having been delayed once by money troubles last year.

June Sales Dropped

Nationwide sales of used machinery fell below May levels during June, according to the Machinery Dealers National Association. The MDNA's monthly sales index for June is 131.3 as against 145.7 for May. On this basis June was the second slowest month in the first half—surpassed only by January.

The Association's index for the second quarter sales was 136.6.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS
10' x 10 Ga. Bertsch No. 6 Initial Type
8' x ¼" Bertsch Initial Type
12' x ¼" Bertsch Initial Type
32' x ¾" BALDWIN PYRAMID TYPE—Late

BRAKE—BOX & PAN
6' x ¼" Dreis & Krump, 12" Finger Extension

BRAKES—PRESS TYPE
90 ton Niagara, Model 90-8-10
16' x 10 Ga. Clearing

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton P&H	40' Span 220 Volt D.C.
10 ton P&H	55' Span 230/3/60
10 ton P&H	30' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton Milwaukee	56' Span 440/3/60 A.C.
5 ton Aux	Arr. for Magnet Opr.
15 ton Shepard Niles	55' 6" Span 220/3/60
With 5 ton Auxiliary	
20 ton P&H	57' 6" Span 220/3/60
With 5 ton Auxiliary	
30 ton Shaw	70' Span 230 Volt D.C.
120 ton Niles	67' Span 230 Volt D.C.
120 ton Shepard Niles	77' Span 220/3/60 A.C.

DRAW BENCHES
7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

FLANGING MACHINE
Blue Valley Flanging Machine. Capacity ⅛"

FORGING MACHINES
1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.

HEADERS
#250C Manville Single Stroke Solid Die
#44 Waterbury Farrel Dble. Str. Open Die
¾" National DSSD Header, with 1" National Hydr. Straightener & #4 Ajax-Hogue Wire Drawer

LEVELERS—ROLLERS
24" Torrington 9 Rolls 8" Dia.
50" Youngstown Processor & Leveler, Capy. .100"
60" Guide 17 Rolls 4½" Dia.
72 Leveler 17 Rolls 2⅝" Backed Up

LEVELER—STRETCHER
100 ton Hydraulic Stretcher Leveler

NIBBLER
Pullmax Model 2, Capacity 11/32"

PRESSES—HYDRAULIC
300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton HPM 4-Col. Bed Area 36"x36", Stroke 24"
500 ton Watson Stillman Piercing Press, 48" x 72"
1000 ton Southwark Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68 x 68", Stroke 40"

PUNCH & SHEAR COMBINATIONS
#2½ Buffalo Ironworker
Style EF Cleveland 42" Throat, Plain Jaw

ROLLING MILLS
3½" x 7" Six Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
20" x 36" Single Stand Two High
26" x 60" Single Stand Two High
18" x 32" Birdsboro 3-Hi Bar Mill
22" x 40" Lewis 3-Hi Sheet Mill
22" x 84" Single Stand Three High
34" x 112" Single Stand Three High

ROLLS—PLATE STRAIGHTENING
72" McKay 9 Rolls 15" Dia. Backed-up
92" Hilles & Jones, 6 Rolls 10" Dia.

SCALPING OR BILLET PEELING MACHINE
Medart #6 Size HPBP, Capacity, 3⅛" to 5" Incl.

SHEAR—BAR
#1½ United Vertical Bar Shear R H

SHEARS, MISC.
36" Hallden Shear Line Drum Type, Capy. 33-38 Ga.
60" x 10 Ga. Cut-off Line
90" x 14 Ga. Cut-off Line

SHEAR—ROTARY
No. 23A Quickwork Whiting 3/16" Capacity

SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x 10 Ga. Wysong & Miles
10' x ¼" United
10' x ⅜" Niagara No. 910
6' x ⅛" Cincinnati
8" x ⅛" Bertsch

SLITTERS
36" Waterbury Farrel, Slitting Line, Arbor 4⅛" Dia.
36" Wean Slitting Line, Arbor 5" Dia.

STRAIGHTENERS
Torrington #1734 12-Roll, Capy. 1⅜", Rd. 1-9/16"
⅝" Medart Straightening & Cut-Off Machine 20 ft. Cut-Off

SWAGING MACHINE
#6½A Fenn 2-Die, Capacity 3⅜" Tube, 1¼" Solid 10" Die Length, Hydraulic Feed

TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Olsen 3-Screw Beam Type Universal
60,000 lb. B-L-H Hydraulic Universal
500,000 lb. Olsen, Super DeLuxe Compression

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ADVERTISERS IN THIS ISSUE

An asterisk indicates that a booklet, or other information, is offered in the advertisement.

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A

AAA Machinery & Equipment Co. 153
Aetna-Standard, Div. Blaw-Knox Co. 71
*Airline Welding & Engineering.. 155
Ajax Electric Motor Corp. 153
Alan Wood Steel Co. 124
*Allegheny Ludlum Steel Corp. 51
*Allen-Bradley Co. 60
*Allied Research Products, Inc. 137
American Air Compressor Corp. 152
American Brass Co. 111
American Pulverizer Co. 16
American Screw Co. 100
American Steel & Wire Div., United States Steel Corp. 32-33
*Armco Steel Corp. 6
*Atlas Car & Mfg. Co. 122

B

Barber-Colman Co. 98-99
Basic Inc. 42
Belyea Co., Inc. 153
Bertsch & Co. 146
*Bethlehem Steel Co. 1, 17, 18-19, 20
Binswanger 152
Birdsboro Steel Foundry & Machine Co. 147
*Black & Decker Mfg. Co. 103
Blaw-Knox Co., Aetna-Standard Div. 71
Bohannon, S. A. 154
*Bridgeport Brass Co. 44
Brill Equipment Co. 152
*Buffalo Forge Co. 4

C

Canton Drop Forging & Mfg. Co. 155
Chicago Rawhide Manufacturing Co. 82
*Clearing Division U. S. Industries, Inc. 63
*Cleveland Tramrail Div., Cleveland Crane & Engineering Co. 156
Coeval, Inc. 154
Columbia-Geneva Steel Div., United States Steel Corp. 32-33
Consumers Steel & Supply Co. 154
*Continental Steel Corp. 112
*Copperweld Steel Co., Aristoloy Steel Div. Inside Front Cover
Copperweld Steel Co., Ohio Seamless Tube Div. 39
Covington Machinery & Const. Co. 154
Crucible Steel Co. of America 14, 37
*Cutler-Hammer Inc. Back Cover
Cuyahoga Stamping Co. 154

D

Dodge Manufacturing Corp. 34

E

Eastern Machinery Co. 151
*Eastman Kodak Co. Contour Projector Div. 101
*Elastic Stop Nut Corp. of America 41
Electric Equipment Co. 153
Eveready Supply Co. 151

F

Federal Machine & Welder Co. 121
Foster, L. B., Co. 153
Fuller Co. 36

G

*Gisholt Machine Co. 38
Goodman Electric Machinery Co. 151
Goodyear Tire & Rubber Co. Industrial Products Div. 10
Goss & DeLeeuw Machine Co. 155
*Great Lakes Steel Corp. 76-77
Greenlee Bros. & Co. 78

H

*Handy & Harman 22
*Hayes, C. I., Inc. 13
Henry, A. T., & Co., Inc. 151
*Homestead Valve Manufacturing Co. 145
*Hough, Frank G., Co. 79
Hughes, Arnold, Co. 153, 154
Hyde Park Foundry & Machine Co. 113
Hyman, Joseph, & Sons 154

I

*Inductotherm Corp. 108
Industrial Machine Representatives Co. 117
*Industrial Metal Protectives, Inc. 118
*Ingersoll-Rand Co. 74
Inland Steel Co. 138
Iron & Steel Products, Inc. 150

J

Jessop Steel Co. 66
*Jones & Lamson Machine Co. 149

K

Kaplan, M. S., Co. 133
Keystone Steel & Wire Co. 107
Kidde, Walter, & Co., Inc. 15
Kinderman, Lou. F. 153

L

Landis Machine Co., Inc. 26-27
Land, L. J., Inc. 151, 153
Lang Machinery Co., Inc. 153
Leeds & Northrup Co. 30
Lockhart Iron and Steel Co. 154

M

MacCabe, T. B. Co. 150
Mid-States Pipe & Supply Co. of Louisiana 152
Miles Machinery Co. 154
*Minnesota Mining & Mfg. Co. Abrasives—Industrial Tape 31
*Minnesota Mining & Mfg. Co. Adhesives, Coatings & Sealers Div. 127
*Morgan Construction Co. 5
Morrison Railway Supply Corp. 153
*Mundt, Chas. & Sons 146

N

National Forge Co. 119
National Machinery Exchange 151
National Steel Corp. 76-77
New York & New Jersey Lubricant Co. 120
*Niagara Machine & Tool Works 23
Nicholson File Co. 115
North Carolina Dept. of Conservation & Development 12

O

*Ohio Crankshaft Co. 123
Ohio Seamless Tube Div. Copperweld Steel Co. 39
Orange County Machinery, Inc. 154
Ornitz Equipment Corp. 152

P

Paxon Machine Co. 117
Pittsburgh Screw & Bolt Corp. 75

R

*R-S Furnace Co., Inc. 11
Rail & Industrial Equip. Co., Inc. 152
*Republic Steel Corp. 28-29
Roebling's, John A. Sons Corp. 35, 154
Ryerson, Jos. T. & Son, Inc. 8

S

Salem-Brosius, Inc. 104
Sciaky Bros. Inc. 40
*Screw & Bolt Corp. of America 75
Ship Supply Corp. 153
Stanhope, R. C., Inc. 153
Steel & Tube Div., Timken Roller Bearing Co. 54
*Sun Oil Co. 68
Swindel-Dressler Corp. 97

T

Tennessee Coal & Iron Div., United States Steel Corp. 32-33, 152
*Texaco Inc. 80-81
*Textile Machine Works Contract Div. 56
*Thomas Machine Manufacturing Co. 129
Timken Roller Bearing Co., Steel & Tube Div. 54
*Trabon Engineering Corp. Inside Back Cover
Tractor & Equipment Co. 152
*Trent Tube Co. Subsidiary of Crucible Steel Co. of America 14
Tubular Rivet & Stud Co. 72

U

United Engineering & Foundry Co. 21
United States Pipe & Foundry Co. Steel & Tubes Div. 24-25
United States Steel Corp. 32-33, 131, 152
United States Steel Export Co. 32-33
Universal Atlas Cement Div., United States Steel Corp. 131
Universal Machinery & Equipment Co. 152

V

Vanadium Corp. of America 135
Vaughn Machinery Co. 53
Vic Metal, Inc. 154

W

Wallack Bros. 154
Ward Steel Co. 102
Washington Steel Corp. 114
Waterbury-Farrel Foundry & Machine Co. Div. of Textron, Inc. 109
Weiss Steel Co., Inc. 154
Wheland Co. 64
Whisler Equipment Co. 152

CLASSIFIED SECTION

Clearing House 150-154
Contract Manufacturing published in first and third issue of each month, see August 6 or August 20 issue.
Employment Exchange 154
Equipment & Materials Wanted.. 154

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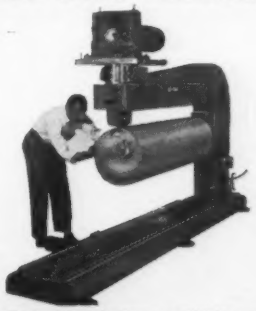

This Airline 10 ton roll planisher features a 72" throat and 36" clearance above rails for working shells, truncated cones, etc. over lower roll. Unlimited work space above upper roll. This unit may be used for leveling welds in steel and stainless steel up to ¼" in thickness. Idler and powered pressure rolls swivel 90° to permit selection of longitudinal and circumferential application.

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Provides 80% Floor Space Savings

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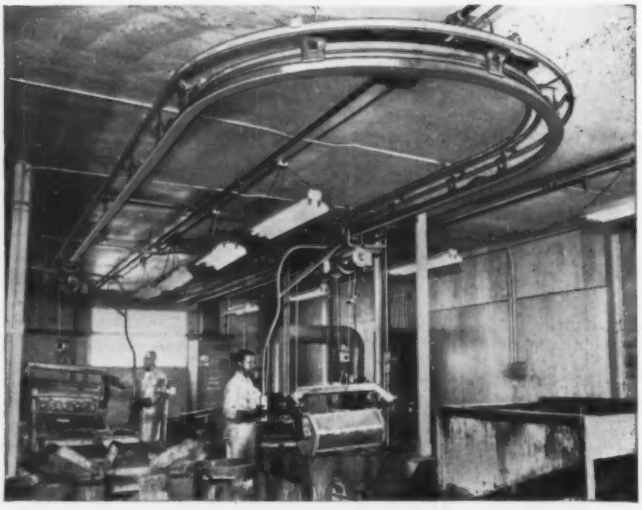

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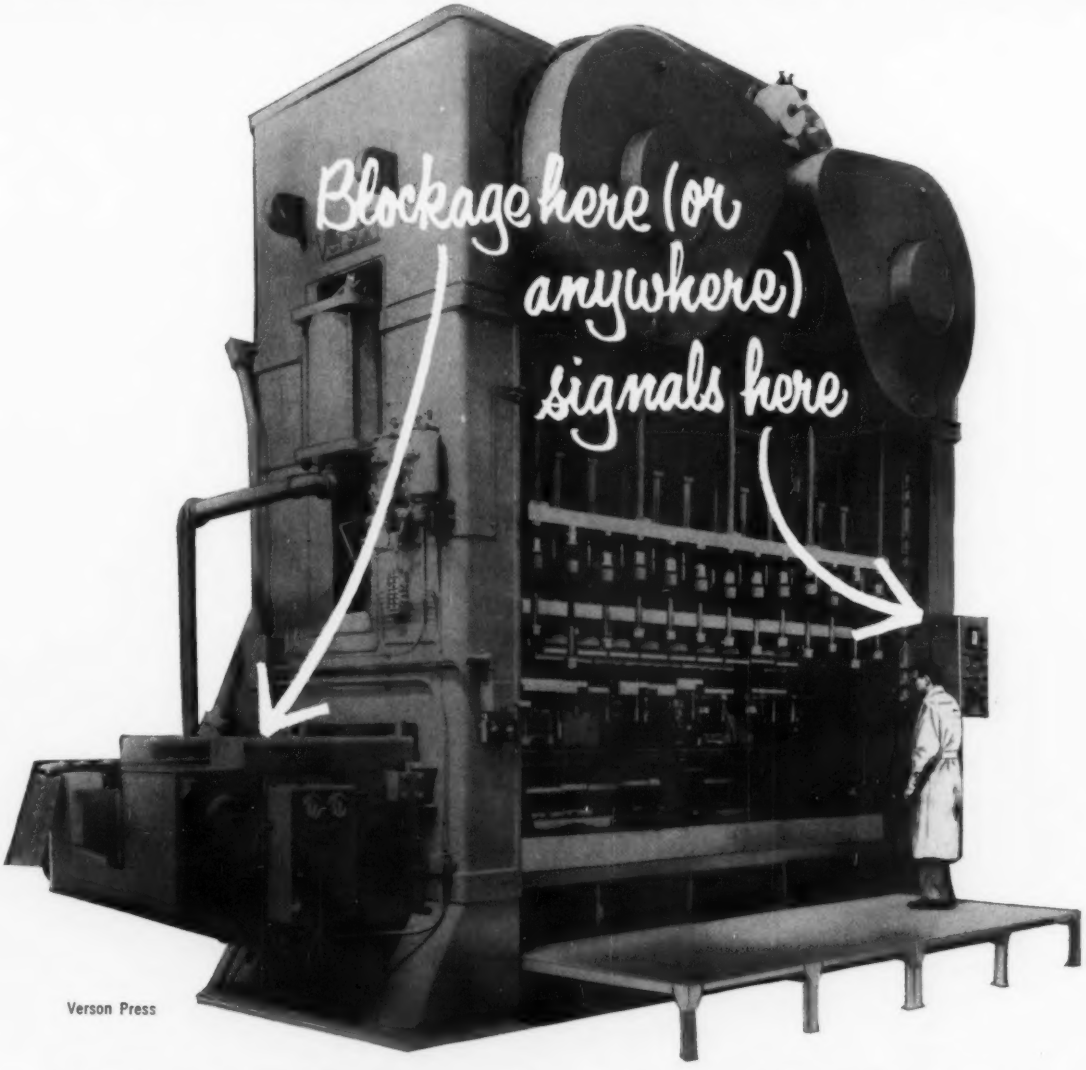

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